STATE OF CALIFORNIA
The Resources Agency

Department of Water Resources

BULLETIN No. 177-67

WATERMASTER SERVICE IN NORTHERN CALIFORNIA

1967 SEASON

June 1968

RONALD REAGAN
Governor
State of California

WILLIAM R. GIANELLI

Director

Department of Water Resources

FOREWORD

Bulletin No. 177-67 is the first in a series that discusses the watermaster service provided by the Department of Water Resources to areas in Northern California. In the past, the watermaster report has been published annually as an office report. As an annual bulletin the report will be available for greater distribution outside of the Department. Authority to prepare this report is described in the California Water Code, Division 2, Part 4, Chapter 7.

The bulletin is presented in two parts. Part I contains general information about water rights, water supply, service areas and watermaster duties. Part II contains the specifics of the 1967 watermaster season, including the streamflow in the various service areas, the methods of distribution, and all other information pertinent to 1967 watermaster activities.

William R. Granelle

William R. Gianelli, Director Department of Water Resources The Resources Agency State of California May 24, 1968

State of California The Resources Agency DEPARTMENT OF WATER RESOURCES

RONALD REAGAN, Governor WILLIAM R. GIANELLI, Director, Department of Water Resources JOHN R. TEERINK, Deputy Director

This report was prepared by the Northern District under the direction of

		• • • • District Engineer • Chief, Operations Section
,	ЪУ	
		• • Supervising Watermaster • • • • • • • • • • • • • • • • • • •
	assisted by	
Harvey A. Jorgensen Kenneth E. Morgan H. J. Nessler George H. Pape Virgil D. Buechler Charles H. Holmes		
		• • • Deputy Watermaster

Report data and text on the Indian Creek and Middle Fork Feather
River Watermaster Service Areas were furnished by the
Sacramento District

TABLE OF CONTENTS

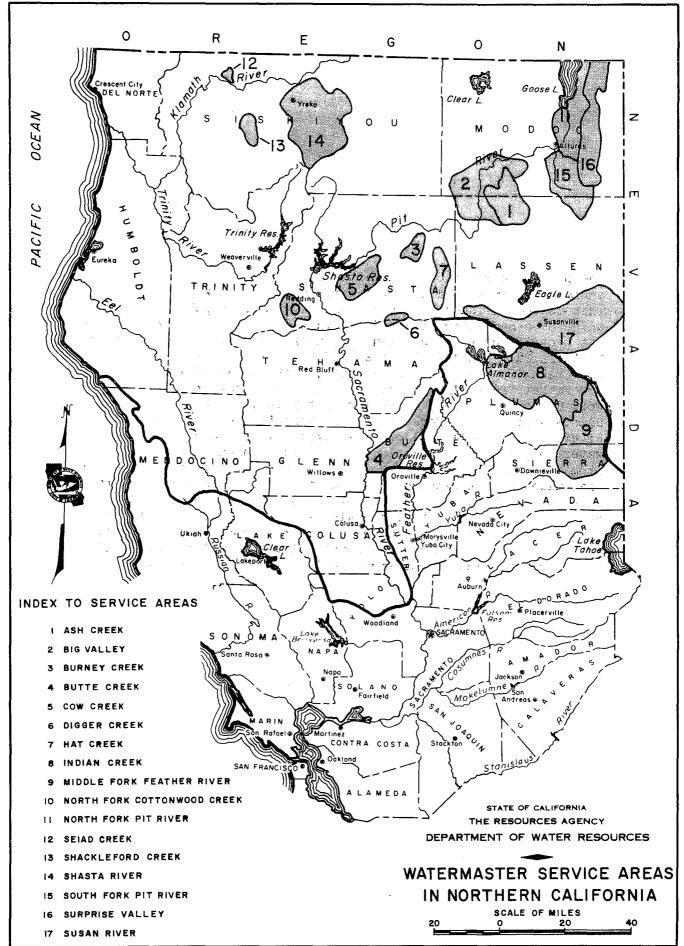
				•		Page
<i>ਇ</i> ਸਤਾΩਸ਼	WORD			100		. iii
			• • •			
ORGAI	NIZATION	• • • • • •	• • •	• • •	• .	. iv
ABSTI	RACT	· · · · · · · ·			•	. vii
WATEI	RMASTER SERVICE AREAS IN NORTHERN	CALIFORNIA-Fig	ure l		•	.viii
PART	I - GENERAL INFORMATION	• • • • • •		• • •	•	. 1
	Determination of Water Rights		• • •	• • •	•	. 1
	Description of Watermaster Service	e Areas	• • •		•	. 2
,	Watermaster Responsibilities	• • • • • •	• • •		•	• 3
	Water Supply		• • 0		•	. 6
PART	II - WATERMASTER SERVICE	• • • • • •	• • •	• • •		. 13
	Ash Creek Service Area Schematic - Figure 2 Streamflow - Table 5				•	
·	Big Valley Service Area Schematic - Figure 3 Streamflow - Tables 6-7				•	• 25
	Burney Creek Service Area Schematic - Figure 4 Streamflow - Table 8		• • •		•	• 31
	Butte Creek Service Area · · · · Schematic - Figure 5 · · · Streamflow - Tables 9-11 · ·				•	• 39
	Cow Creek Service Area Schematics - Figures 6-6c . Streamflow - Table 12			• • •	•	454957
	Digger Creek Service Area Schematic - Figure 7 Streamflow - Table 13		• • •	• • •	•	596163
	Hat Creek Service Area · · · · · Schematics - Figure 8-8b · · Streamflow - Table 14 · · ·		• • •	· · ·	• •	656773

TABLE OF CONTENTS (cont.)

	<u>:</u>	Page
	Indian Creek Service Area	75 77 85
	Middle Fork Feather River Service Area	87 91 93
	North Fork Cottonwood Creek Service Area	97 99 101
	North Fork Pit River Service Area	103 109 133
	Shackleford Creek Service Area	145 147
	Shasta River Service Area	151 157 177
	South Fork Pit River Service Area	185 189 199
	Surprise Valley Service Area	203 211 233
	Susan River Service Area	245 251 263
m= 3	TABLES	_
Numb 1	er Superior Court Decrees Regulating Water Distribution	Page 4
		7
2	Snowpack as of April 1 and May 1, 1967, at Representative Courses	8
3	Precipitation at Selected Stations - 1966-67 Season	9
14	Runoff at Selected Stations - 1966-67 Season	10
	(Tables 5 through 63 are listed under the individual service area headings).	

ABSTRACT

The primary purpose of watermaster service is to distribute water among users in accordance with their established water rights. This is accomplished by apportioning available supplies in streams which have had water rights determinations. / Watermaster service was provided by the Department of Water Resources to 16 areas in Northern California during the 1967 watermaster season. They are: Ash Creek, Big Valley, Burney Creek, Butte Creek, Cow Creek, Digger Creek, Hat Creek, Indian Creek, Middle Fork Feather River, North Fork Cottonwood Creek, North Fork Pit River, Shackleford Creek, Shasta River, South Fork Pit River, Surprise Valley, and Susan River./ Essentially all of these areas experienced above-average water supplies during the 1967 irrigation season. The supply varied from average in some areas to the best year of record in others./ The bulletin is presented in two parts. Part I contains general information about water rights, water supply, and watermaster areas and duties. Part II contains specific information for each service area during the 1967 watermaster season, including available streamflow, methods and amounts of water distribution, and all other information pertinent to 1967 watermaster activities.



time edit do edificie

PART I - GENERAL INFORMATION

Distribution of water in watermaster service areas is a continuing statutory function of the Department of Water Resources as provided in Part 4 of Division 2 of the California Water Code.

The primary purpose of watermaster service is to distribute water in accordance with established water rights. This is accomplished by apportioning available supplies in streams which have had water right determinations.

A major benefit of watermaster service to water users and the State is that court litigation and physical violence, which in past years occurred quite frequently, are essentially eliminated. Under watermaster service each water right owner is assured that his rights are being protected without his having to take legal action against other users. Another important benefit results from increased use of available supplies through reduction of wasted water.

Because both the water right owners and the State receive benefits from watermaster service, the costs of performing the service are shared. The State general tax fund pays for one-half the cost of operating a service area. The water right owners in the service area pay the other one-half.

Determination of Water Rights

Water rights determinations for purposes of establishing a water-master service area may be accomplished by "statutory" adjudication, "court" adjudication, permit or license to appropriate, or by agreement.

The California Water Code (Sections 2500-2900) contains procedures whereby water users on any stream may petition to have the State Water Resources Control Board, Division of Water Rights, make a legal determination of water rights on that stream. If the Board finds that such a determination is in the public interest, it proceeds with a Statutory Adjudication. This adjudication ultimately results in a court decree which defines all water

rights on the stream.

A similar but less extensive method of defining water rights involves a "court" adjudication procedure. When an action is brought before the Superior Court in the county in which there is a water rights dispute, the court has two methods available for its settlement. It may refer the action to the State Water Resources Control Board for a determination under authority contained in Sections 2000-2076 of the Water Code. Or, it may make an investigation of the facts and render a decision without referral to the Board.

These court adjudications determine only the water rights of parties named in the action and therefore do not necessarily define all water rights on the stream. Consequently, they sometimes precipitate serious conflicts between decreed water right owners and persons claiming rights for riparian lands which were not considered in the decree.

Almost all of the streams under state watermaster service have had their water rights defined by the courts under one of the above adjudication procedures. These adjudications (decrees) establish each owner's water rights as to allowable rate of diversion, season of use, point of diversion, and place of use. They also establish priorities whereby each owner's rights are shown in relation to the rights of all other decreed owners.

Under the priority system all first priority rights must be fully satisfied before water can be diverted to any lower priority rights (second, third, etc.). When a shortage occurs within any priority, the available water is proportioned among all owners of that priority.

Description of Watermaster Service Areas

A watermaster service area may be created either by petition from water users (Section 4050 of the Water Code) or by order of a Superior Court.

The first watermaster service areas were created in September 1929, while the most recent addition was made in June 1964. Prior to 1929, some watermaster service was provided in accordance with the Water Commission Act of 1913. There are now about 50 streams in Northern California which are under state watermaster service. These are combined into the 17 service

areas shown on Figure 1. Fifteen are in the Northern District and two are in the Sacramento District. The Seiad Creek service area is presently inactive.

The service areas are located primarily in the mountainous northeastern part of the State where the growing season varies between about 100 and 140 days. Meadow hay and alfalfa are the principal crops under irrigation, although a considerable amount of land is used exclusively for pasturing livestock. Most irrigation is accomplished by gravity systems, with water users diverting directly from the streams at one or more diversion points. However, pumped diversions and sprinkler irrigation systems are becoming popular in some areas.

Table 1 lists all watermaster service areas in Northern California, the date each was created, and the corresponding decrees and agreements under which each is operated.

Schematic drawings of the major stream systems within each service area are presented in Figures 2 through 17. These drawings show the relative location of major roads, stream gaging stations, diversion points, and water right allotments for each diversion. The diversion points shown in these figures correspond to those listed in the respective decrees which define the water rights.

Watermaster Responsibilities

To assure the proper distribution of water within his service area, each watermaster must ascertain the amount of water available and distribute it both by amount and priority in accordance with established water rights. To accomplish his purposes, the watermaster is provided authority both by the Water Code and by provisions of pertinent court decrees or voluntary agreements, to physically regulate the various streams in a service area. He is further authorized to supervise the design, construction, operation and maintenance of diversion dams, headgates, and measuring devices.

Each watermaster supervises water distribution at approximately 100 to 200 diversions in one or more service areas. The frequency of visiting these diversion points substantially increases in years of short

Watermaster Service	Name of		···	Decree		Date Water- master Service	
Area	Stream System	County	Number	Date	Type*	Area Created	Remarks
Ash Creek	Ash Creek	Modoc ** and Lassen	3670	10-27-47	CR	4-03-59	Included as part of Big Valley service area 1949 through 1958.
Big Valley	Pit River	Modoc ** and Lassen	6395	2-17-59	S	11-13-34	Service provided in accordance with recorded agreement in 1934. Service area operated under recorded agreement 1935 through 1958, and under decree since 1959.
Burney Creek	Burney Creek	Shasta	5111	1-30-26	CR	9-11-29	Service provided in accordance with decree since 1926.
Butte Creek	Butte Creek	Butte	18917	11-06-42	s	1-07-43	
Cow Creek	North Cow Creek Oak Run Creek	Shasta Shasta	5804 5701	4-29-32 7-22-32	CR CR	10-17-32 10-17-32	
	Clover Creek	Shasta	6904	10-04-37	CR	1-21-38	Included in Cow Creek service area.
Digger Creek	Digger Creek	Shasta and Tehama **	2213 3214 3327 4570	8-12-99 5-27-13 10-16-17 2-24-27	с с с	6-11-64	
Hat Creek	Hat Creek	Shasta	5724 7858	5-14-24 10-07-35	CR CR	9-11-29	Service provided in accordance with decree since 1924.
Indian Creek	Indian Creek	Plumas	4185	5-19-50	s	2-19-51	
Middle Fork Feather River	Middle Fork Feather River	Plumas ** and Sierra	3095	1-22-40	S	3-29-40	
North Fork Cottonwood Creek	North Fork Cottonwood Creek	Shasta	5479	6-09-20	CR	9-11-29	Service provided intermittently in accordance with the decree since 1924.
North Fork Pit River	North Fork Pit River and all tributaries except Franklin Creek	Modoc	4074	12-14-39	S	12-18-39	All stream systems consolidated into North Fork Pit River service area 12-13-40.

÷

TABLE 1 (Continued)

Watermaster Service	Name of			Decree		Date Water- master Service	
Area	Stream System	County	Number	Date	Type*	Area Created	Remarks
	New Pine Creek	Modoc .	2821 .	6-14-32	CR	6-22-32	
	Davis Creek	Modoc	2782	6-30-32	CR	7-13-32	
	Franklin Creek	Modoc	3118	9-08-33	CR	9-14-33	
*	Cottonwood Creek	Modoc	2344	5-03-40	CR	12-13-40	
Seiad Creek	Seiad Creek	Siskiyou	13774	4-10-50	s	11-06-50	Service provided in accordance with decree by order of
			,				the court in 1950. Service suspended since September 1964
Shackleford	Shackleford	Siskiyou	13775	4-10-50	s	11-06-50	Service provided in accordance with decree by order of
Creek	Creek					<u>.</u>	the court in 1950.
Shasta River	Shasta River	Siskiyou	7035	12-29-32	s	3-01-33	
South Fork	South Fork	Modoc **	3273	10-30-34	CR	12-31-34	Service includes operation of West Valley Reservoir
Pit River	Pit River	and Lassen		1			(built subsequent to issuance of decree) in accordance
	Pine Creek	Modoc	- Agreement	11-22-33		1-12-35	with the demands of South Fork Irrigation District.
Surprise Valley	Cedar Creek	Modoc	1206	5-22-01	С	9-11-29	All adjudicated stream systems in Surprise Valley were
			2343	2-15-23	C		consolidated into the Surprise Valley service area on
	Soldier Creek	Modoc	2405	11-28-28	CR	9-11-29	1-10-39. Bidwell Creek was added on March 16, 1960.
	Ow1 Creek	Modoc	2410	4-29-29	CR	9-11-29	Service started on Cedar Creek in 1926 in accordance
	Emerson Creek	Modoc	2840	3-25-30	CR	4-02-03	with the decree. Service was provided on Soldier and
	Mill Creek	Modoc	3024	12-19-31	CR	12-30-31	Owl Creeks in 1929 in accordance with the decrees by order of the court.
•	Deep Creek	Modoc	3101	1-25-34	CR	12-29-34	order of the court.
•	Pine Creek	Modoc	3391	12-07-36	CR	1-13-37	
	Rader Creek	Modoc	3626	6-04-37	CR	6-12-37	
	Eagle Creek	Modoc	2304	4-05-26	С	1-10-39	
		•	3284	11-05-37	CR		
	Bidwell Creek	Modoc	6420	1-13-60	S	3-16-60	
Susan River	Susan River	Lassen	4573	4-18-40	CR	11-10-41	•
	Baxter Creek	Lassen	8174	12-15-55	S	2-16-56	
	Parker Creek	Lassen	8175	12-15-55	S	2-16-56	
•		. :	9.	•			

^{*} Explanation of type of Decree:

C Court adjudication (court makes determination from evidence submitted - no report of referee)

CR Court adjudication (referred to State Water Resources Control Board for investigation and report)

Statutory adjudication (State Water Resources Control Board is petitioned by water users to make a determination of all water rights on a stream system)

^{**} Decree entered by the superior court of this county.

water supply.

Permanent measurement and control devices, which the State requires at each owner's main point of diversion, are constructed by the water users under supervision of the watermaster. Installation of accurate, easily set, and lockable structures is a continuing objective of watermaster service, since once they are built, conflicts among water users almost always stop. Also, the watermaster's work is reduced greatly by good structures.

The watermaster is often called upon to make immediate field or on-the-spot interpretations of various court decrees, agreements, etc. Since most of these documents were written more than 30 years ago, many situations have developed that were not initially considered. Therefore, the watermaster must use sound, careful, and practical judgment in attempting to reach workable solutions to water disputes. To accomplish this he must possess a good understanding of California Water Law.

Water Supply

Water supply in the watermaster service areas is derived principally from unregulated runoff of small streams. Peak runoff, mostly snowmelt, occurs in the spring, with relatively small streamflow occurring in the summer and early fall. An additional supply from storage reservoirs or ground water is used in some areas to supplement natural streamflow.

In some service areas the water supply must be predicted in advance to determine the date watermastering will begin and to some extent, the manpower needed. The Department's Bulletin No. 120 series, "Water Conditions in California", is used to assist in these predictions.

Precipitation

The streamflow available for distribution is affected by total precipitation, amount of snowpack, air temperature, and the amount of precipitation received during the irrigation season. The latter is particularly important in the Upper Pit River-Surprise Valley areas, where about 25 to 30 percent of the annual precipitation occurs in

April, May and June. Spring storms, which are normally accompanied by cooler temperatures, materially affect both the supply and the demand for water.

Temperatures in the spring affect the demand for water and the manner in which snowmelt runoff occurs. A hot, dry spring depletes the water supply very early, even in years of normal snowpack. A cold, wet spring can extend the supply well into the irrigation season, but cold temperatures retard the growth of crops and are not necessarily desirable.

Data collected at representative snow courses showing the snow-pack as of April 1, and May 1, 1967 are presented in Table 2. This information was obtained from the Department's Bulletin No. 120-67.

Table 3 presents information on precipitation at selected stations in the service areas. The seasonal precipitation gives an indication of the related water supply available for distribution and provides a basis for comparing the current year's supply with long time average supply.

Streamflow

The general water supply available for diversion within each watermaster area is determined from stream gaging stations placed at key locations in the main stream channels. The several major stations are installed and maintained either by the United States Geological Survey or by the Department of Water Resources as part of a Federal-State program for collection of year-round streamflow records. However, numerous other stream gaging stations are installed and operated by the watermaster during the irrigation season to provide supplemental information.

Additional gaging stations are often installed by the watermaster in selected diversion ditches to further assist him in proper distribution of the various water right allotments.

Table 4 presents runoff data at selected stream gaging stations in or near the service areas. Runoff data at stream gaging stations used by the watermasters are contained in tables following the description of each area. These data are used in conjunction with schedules showing total water rights to determine the adequacy or shortage of the water supply.

TABLE 2

SNOWPACK AS OF APRIL 1 AND MAY 1, 1967 AT REPRESENTATIVE SNOW COURSES

	4			WATER	CONTENT OF SNOW	(IN INCHES)	
Watermaster Service Area	Snow Course*	Elevation (In feet)	April 1 Average (1931-1960)	April 1 1967	In Percent of April I Average	May 1 1967	In Percent of April 1 Average**
Shackleford Creek	Parks Creek	6,700	34.1	36.9	108		
Shasta River	Middle Boulder No. 1	6,600	32.9	31.2	95	43.1	131
	Little Shasta	6,200	21.4	22.7	106	10.1	101
Ash Creek	Blue Lake Ranch	7,300	10.3	12.5	121		
Big Valley	Eagle Peak	7,200	16.2	15.6	96		
North Fork Pit River	Cedar Pass	7,100	17.0	13.8	81	22.3	131
South Fork Pit River Surprise Valley	Adin Mountain	6,350	14.0	16.7	119	2.5	18
D			25.0		40-		
Burney Creek	Thousand Lakes	6,500	36.8	38.5	105	55.4	151
Cow Creek	New Manzanita Lake	5,900	7.2 2.5	9.1	126 148	17.2	239
Digger Creek Hat Creek	Burney Springs	4,700	2.5	3.7	148		
Butte Creek	Humbug Summit	4,850	12.4	12.4	100		
Susan River	Silver Lake Meadows	6,450	27.7	41.0	148	46.3	167
	Fredonyer Pass No. 1	5,750	9.3	10.8	116		
Indian Creek	Independence Lake	8,450	41.1	61.6	150	74.1	180
Middle Fork	Mount Deyer No. 1	7,100	24.6	31.4	128	40.8	166
Feather River	Rowland Creek	6,700	17.3	24.6	142	28.9	167
	Yuba Pass	6,700	31.8	44.0	138	58.3	183

^{*} Snow courses are listed according to elevation within each major grouping of watermaster service area. They do not necessarily correspond to any specific river or creek.

^{**} Data collected for selected courses.

TABLE 3 '
PRECIPITATION AT SELECTED STATIONS - 1966-67 SEASON

								•							
Station Name	County	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total	Percent of mean
Fort Jones Ranger Station	Siskiyou	$\frac{0.20}{1.59}$	$\frac{3.73}{2.77}$	$\frac{5.11}{4.02}$	6.27 4.06	$\frac{0.21}{3.14}$	$\frac{2.77}{2.21}$	1.60 0.98	$\frac{0.02}{1.11}$	3.22	0.35 0.35	$\frac{0.33}{0.34}$	$\frac{0.17}{0.40}$	$\frac{23.98}{21.78}$	110
Happy Camp Ranger Station	Siskiyou	$\frac{1.03}{4.07}$	$\frac{14.70}{7.25}$	13.26	$\frac{15.45}{11.31}$	$\frac{1.22}{8.24}$	7.59 6.45	$\frac{3.61}{2.72}$	$\frac{0.79}{2.16}$	$\frac{0.48}{1.06}$	0.00	$\frac{0.02}{0.17}$	$\frac{0.42}{0.74}$	58.57 54.96	107
Yreka	Siskiyou	$\frac{0.16}{1.45}$	$\frac{2.93}{2.00}$	$\frac{4.53}{3.30}$	$\frac{4.62}{3.19}$	$\frac{0.18}{2.29}$	$\frac{1.82}{1.61}$	$\frac{1.63}{0.92}$	$\frac{0.50}{1.03}$	1.71 0.86	$\begin{array}{c} 0.04 \\ \hline 0.27 \end{array}$	$\frac{\mathrm{T}}{0.39}$	$\frac{0.40}{0.45}$	$\frac{18.52}{17.76}$	104
Chico Experiment Station	Butte	$\frac{0.00}{1.46}$	$\frac{8.50}{2.41}$	$\frac{4.60}{5.12}$	$\frac{10.31}{5.03}$	$\frac{0.60}{4.43}$	4.09 3.29	$\frac{5.35}{2.31}$	$\frac{0.44}{1.16}$	$\frac{1.24}{0.44}$	$\frac{0.01}{0.01}$	$\frac{0.03}{0.07}$	$\frac{0.07}{0.33}$	$\frac{35.24}{26.06}$	135
Redding Fire Station No. 2	Shasta	$\frac{0.00}{2.27}$	$\frac{9.11}{3.76}$	$\frac{7.92}{7.26}$	$\frac{14.03}{7.69}$	$\frac{0.75}{6.19}$	6.85 4.90	$\frac{5.71}{2.95}$	$\frac{1.21}{1.74}$	$\frac{1.34}{1.31}$	$\frac{\mathrm{T}}{0.11}$	$\frac{0.07}{0.13}$	$\frac{0.04}{0.61}$	47.03 38.92	121
Hat Creek Pump House No. 1	Shasta	$\frac{0.00}{1.30}$	$\frac{4.66}{1.83}$	$\frac{3.38}{2.93}$	$\frac{5.69}{2.85}$	$\frac{0.30}{2.84}$	$\frac{3.64}{2.02}$	$\frac{3.44}{1.35}$	$\frac{1.37}{1.26}$	$\frac{0.84}{0.77}$	$\frac{0.26}{0.28}$	$\frac{0.03}{0.16}$	$\frac{0.07}{0.47}$	$\frac{23.68}{18.06}$	131
Bieber-Cary	Lassen	$\frac{0.00}{1.48}$	$\frac{3.93}{1.90}$	$\frac{3.15}{2.71}$	$\frac{6.45}{2.58}$	$\frac{0.25}{2.24}$	1.38 1.96	$\frac{2.76}{1.48}$	$\frac{1.54}{1.48}$	$\frac{1.33}{0.88}$	$\frac{0.45}{0.20}$	$\frac{\mathrm{T}}{0.17}$	$\frac{T}{0.42}$	$\frac{21.24}{17.50}$	121
Lakeview, Oregon	Lake	$\frac{0.17}{1.21}$	3.63 1.37	$\frac{1.78}{1.88}$	$\frac{3.47}{1.84}$	$\frac{0.37}{1.71}$	$\frac{1.78}{1.52}$	$\frac{2.28}{1.15}$	$\frac{1.27}{1.51}$	0.67 1.28	$\underbrace{0.01}_{0.22}$	$\frac{0.13}{0.17}$	$\frac{0.73}{0.58}$	16.29 14.44	113
Alturas Ranger Station	Modoc	$\frac{0.15}{1.07}$	2.78 1.35	$\frac{1.48}{1.63}$	$\frac{3.05}{1,62}$	$\frac{0.15}{1.45}$	$\frac{0.94}{1.37}$	$\frac{1.58}{1.03}$	$\frac{1.05}{1.31}$	$\frac{0.87}{1.03}$	$\frac{0.25}{0.31}$	$\frac{0.10}{0.22}$	$\frac{0.11}{0.43}$	$\frac{12.51}{12.82}$	98
Jess Valley	Modoc	$\frac{0.26}{1.31}$	3.03 1.66	$\frac{1.80}{1.92}$	$\frac{3.13}{1.89}$	$\frac{0.61}{1.95}$	$\frac{1.81}{1.88}$	$\frac{2.96}{1.64}$	$-\frac{2.14}{2.02}$	$\frac{1.60}{1.62}$	$\frac{0.43}{0.41}$	$\frac{0.47}{0.26}$	$\frac{0.30}{0.66}$	$\frac{18.54}{17.22}$	108
Cedarville	Modoc	$\frac{0.13}{1.17}$	$\frac{2.34}{1.41}$	$\frac{1.87}{1.69}$	$\frac{2.58}{1.84}$	$\frac{0.35}{1.50}$	$\frac{0.92}{1.45}$	$\frac{1.46}{0.99}$	$\frac{1.41}{1.04}$	$\frac{1.12}{0.94}$	$\frac{0.19}{0.33}$	$\frac{0.11}{0.15}$	0.15	$\frac{12.63}{12.88}$	98
Susanville Airport	Lassen	$\frac{0.00}{0.92}$	$\frac{2.93}{1.51}$	$\frac{2.33}{2.56}$	$\frac{5.14}{2.53}$	$\frac{0.24}{2.51}$	4.05 1.51	$\frac{1.18}{0.82}$	1.16 0.83	$\frac{2.56}{0.67}$	$\frac{0.45}{0.18}$	0.00	0.35 0.35	$\frac{20.39}{14.48}$	141
Greenville Ranger Station	Plumas	$\frac{0.00}{2.61}$	11.58 4.81	9.02 5.93	15.83 8.89	0.86 7.44	9.55 6.47	$\frac{3.70}{2.84}$	$\frac{1.27}{1.71}$	2.55 0.75	0.20	$\frac{0.20}{0.21}$	0.22	54.98 42.95	128-
Sierraville Ranger Station	Sierra	$\frac{0.02}{1.83}$	$\frac{7.64}{2.76}$	$\frac{5.40}{4.49}$	10.66 4.94	4.23	$\frac{7.46}{2.84}$	2.04 1.63	$\frac{1.32}{1.25}$	$\frac{2.10}{0.54}$	$\frac{\mathrm{T}}{0.29}$	0.18	$\frac{1.32}{0.44}$	* 25.39	*
Vinton	Plumas	$\frac{\mathrm{T}}{0.89}$	$\frac{2.81}{1.44}$	$\frac{2.73}{2.12}$	4.85 1.94	0.17 1.87	$\frac{3.13}{1.43}$	$\frac{1.08}{0.84}$	$\frac{0.93}{1.01}$	$\frac{1.54}{0.50}$	$\frac{0.21}{0.36}$	$\frac{0.19}{0.18}$	0.67 0.25	$\frac{18.31}{12.91}$	142

^{*} Date Unavailable

Note: Figures above line are for current season; below line are long-term averages.

TABLE 4
RUNOFF AT SELECTED STATIONS

1966-67 SEASON (In acre-feet)

	Oct		Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total	Average *	Percent Average
Shasta River near Yreka	7,66	iO 1	11,920	17,350	18,290	13,240	16,680	13,190	14,190	9,650	2,360	1,760	4,300	130,600	127,400	103
Hat Creek near Hat Creek	7,66	60	8,380	8,510	8,400	7,690	8,460	8,050	11,450	16,570	13,050	8,790	7,650	114,700	94,840	121
Pit River near** Canby															164,300	
North Fork Pit Riv near Alturas		14	906	2,220	6,020	7,180	2,880	5,250	14,670	5,230	292	41	47	44,790	32,650	137
South Fork Pit Riv near Likely	er**														51,910	
Susan River at Susanville	27	'1	1,890	3,480	5,620	5,940	12,630	7,050	33,330	17,160	4,880	4,310	351	96,910	69,070	140
Indian Creek near Crescent Mills	2,10	00 1	12,400	34,750	67,050	59,230	121,400	65,730	187,100	105,000	14,390	3,030	2,520	674,700	385,900	175
Middle Fork Feath River near Cilo	er 1,19	90	6,540	22,750	53,750	47,460	92,460	31,450	70,130	49,480	9,960	3,080	3,330	391,600	196,900	199
Butte Creek near Chico	6,68	30 I	19,900	38,530	66,550	42,280	57,140	56,630	68,170	33,530	15,070	10,790	10,400	425,700	282,300	151

^{*} Average annual flow of record through 1963.

^{**} Data unavailable at time of printing. Will be published in U.S.G.S., **1967 Water Resources Data for California, Part 1-Surface Water Records. Volume 2: Northern Great Basin and Central Valley."

Essentially all watermaster service areas experienced above-average water supplies during the 1967 irrigation season. The degree varied from near average in some areas to the best year of record in others.

PART II - 1967 WATERMASTER SERVICE

ne i jazonskom i nakol na podnika sedan silona in

This part of the report gives a general geographical description of each watermaster service area and the major sources of water supply therein. The usual methods of distribution and the actual distribution of the water supply of the 1967 season are discussed. Special occurrences in some areas are also mentioned.

Ash Creek Watermaster Service Area

The Ash Creek service area is located in Modoc and Lassen Counties near the town of Adin. There are 32 water right owners in this area with total allotments of 123.65 cubic feet per second.

The major sources of water supply for the service area are Ash Creek and three tributaries, Willow Creek, Rush Creek, and Butte Creek. Ash Creek rises in the eastern part of the service area and flows westerly through the town of Adin into Ash Creek Swamp and then into the Pit River. Rush Creek heads in the northeastern part of the service area and joins Ash Creek above the town of Adin. Willow Creek and Butte Creek originate in the southeastern part of the service area and join Ash Creek near the head of Ash Creek Swamp. Each of these streams is independently regulated.

Approximately 85 percent of the water rights in the service area are in Big Valley, west of the town of Adin. The remaining water rights are along the upstream tributaries and in Ash Valley. The portion of Big Valley served is approximately 10 miles long by 6 miles wide, extending from the town of Adin to the confluence of Ash Creek and the Pit River. The valley floor is at an elevation of approximately 4,200 feet.

A schematic drawing of each major stream system within the Ash Creek service area is presented as Figure 2, page 17.

Water Supply

The water supply for Ash and Rush Creeks is derived primarily

from snowmelt, since most of the watershed is between 5,000 and 6,000 feet in elevation. Willow Creek and Butte Creek receive a substantial portion of their water from springs. These creeks normally have sufficient water to satisfy demands until about June 1, after which the supply decreases rapidly. By the latter part of June, Ash Creek normally has receded to about 20 cubic feet per second, Rush Creek to about two cubic feet per second, Willow Creek to about five cubic feet per second, and Butte Creek to less than one cubic foot per second. The flow of these creeks then remains nearly constant for the remainder of the season.

The daily mean discharge of Ash Creek at Adin is presented in Table 5, page 19. This stream gaging station is located below a substantial number of the points of diversion; consequently, the table does not include all of the available supply of this creek.

No stream gaging stations were installed on Butte, Rush or Willow Creeks during the 1967 season.

Method of Distribution

Irrigation diversions from Ash Creek and its tributaries are accomplished by small dams placed in the stream channels. Most of the users have several diversion ditches at these dams. These ditches convey the water to the fields where it is spread by means of small laterals. Some of the users employ a system of checks and borders; however, most of the land is irrigated by wild flooding. Return flow is captured by downstream ranches for reuse. In one case a rancher may recirculate his drain water before returning it to the creek for further use. In a few areas, pumps are used to divert the water into ditches or through sprinkler systems.

The Ash Creek decree (see Table 1) establishes the number of priority classes on the various stream systems within the Ash Creek service area as follows: Ash Creek - five; Willow Creek - four; Rush Creek - one; and Butte Creek - two.

1967 Distribution

Watermaster service began May 1 in the Ash Creek service area

and continued until September 30. George H. Pape, Associate Engineer, Water Resources, was watermaster during this period.

Ash Creek. The available water supply in Ash Creek was sufficient to meet all demands (five priorities) until mid-June. For most of the remainder of the irrigation season, water was available for first priority allotments only.

Willow Creek. The available water supply in Willow Creek was sufficient to satisfy all allotments (four priorities) until early in June. Flow in the creek dropped rapidly and second priority regulation began during the last week in June. The seasonal low of 3.5 cubic feet per second, which supplied 30 percent of the second priority allotments, was reached near the end of the season.

Rush Creek. The available water supply in Rush Creek was sufficient to satisfay all allotments (one priority) until the end of June. During the remainder of the season the flow gradually decreased to about 55 percent of total allotments by late September.

<u>Butte Creek.</u> The available water supply in Butte Creek was sufficient to satisfay all allotments (two priorities) until late spring. During the remainder of the season the flow gradually decreased; however, no distribution problems were encountered.

WATERMASTER SERVICE AREA

TABLE 5
DAILY MEAN DISCHARGE

ASH CREEK AT ADIN

March through September 1967 (In second-feet)

				`			
Day :	March	: April	: May	June	July	: August	September
1 2 3 4 5	207 181 140 109 110	135 134 129 107 120	253 262 274 308 332	210 185 156 140 149	12 14 14 12	22 22 21 21 20	16 17 14 14 15
6 7 8 9 10	129 128 124 128 121	113 135 196 156 148	341 374 439 510 588	180 148 130 123 115	12 13 14 14 12	15 16 16 17 19	14 14 14 16 16
11 12 13 14 15	123 112 109 109 132	154 251 210 326 383	567 567 478 427 429	95 91 75 61 59	14 14 14 14 14	19 25 21 21 21	15 14 14 14 14
16 17 18 19 20	502 351 340 245 214	253 208 271 227 214	449 467 465 460 423	52 49 45 42 45	14 20 20 21 16	23 22 23 22 24	14 16 20 19
21 22 23 24 25	198 188 193 162 148	190 308 439 586 785	399 378 355 307 254	43 37 24 26 24	15 18 21 24 24	24 24 21 19 20	22 19 14 14 14
26 27 28 29 30 31	134 123 124 123 121 118	564 536 484 336 272	220 203 190 178 152 156	23 23 20 16 16	21 21 21 23 21 21	24 24 23 18 19 18	16 19 20 21 21
Mean	169	279	361	80.1	16.7	20.8	15.8
Runoff in acre-feet	10400	16600	22220	4760	1030	1280	942

Big Valley Watermaster Service Area

a a journé fisheoir i

Big Valley service area is located in Modoc and Lassen Counties in the vicinity of the towns of Lookout and Bieber. There are 53 water right owners in the area with total allotments of 231.03 cubic feet per second.

The Pit River is the major source of water supply for the service area. The river enters the valley north of the town of Lookout and flows southerly through the western part of the valley and out its southern end. The major place of use is about 13 miles of valley floor along the Pit River at an approximate elevation of 4,200 feet.

A schematic drawing of the Big Valley stream system is presented as Figure 3, page 25.

Water Supply

The available water supply in the Pit River as it flows through Big Valley is ordinarily adequate to satisfy all demands until about June 1. The irrigation practices in Hot Springs Valley, located about 20 miles upstream from Big Valley, have a significant effect on the available water supply in Big Valley throughout the remainder of the irrigation season. Water users in Hot Springs Valley divert most of the flow in Pit River for two or three week periods. Natural flow available for use in Big Valley during these periods is often less than 20 cubic feet per second. Periodic releases from channel storage reservoirs in the lower end of the valley sometimes increase the flow to as much as 200 to 300 cubic feet per second for relatively short periods. Consequently, equitable water distribution in Big Valley is very difficult to attain.

Roberts Reservoir, located on a minor tributary of the Pit River at the upper end of Big Valley above Lookout, serves as a supplemental source of water to those users in the area who are members of the Big Valley Mutual Water Company. Water from this reservoir is

released into the Pit River and distributed to members of the water company along with the natural flow to which they are entitled.

Records of two stream gaging stations in the Big Valley service area are presented in Tables 6 and 7, pages 27 and 28.

Method of Distribution

Most water users in the Big Valley service area irrigate on a rotation schedule by either wild flooding or by checks and borders. Large flashboard dams placed in the channel make it possible to use the large heads of water characteristic of the supply in the area. In addition, some pumps are used for diversion, both in ditches and directly into sprinkler systems. The ranches which irrigate by wild flooding must use large heads of water in order to cover unleveled or high ground. Much of the runoff is recaptured for use by downstream lands, resulting in a relatively high irrigation efficiency for the valley.

The Big Valley decree (see Table 1) provides for the distribution of water from Pit River in four priority classes.

1967 Distribution

Watermaster service began May 1 in the Big Valley service area and continued until September 30. Virgil D. Buechler, Water Resources Technician II, was watermaster during this period.

A near record snowpack, combined with continuing storms through April and May, provided a plentiful water supply. Many long-time residents had hay crops of record yield.

During May and early June, flows in the Pit River in Big
Valley averaged more than 500 cubic feet per second. This greatly
exceeded all demands and prevented installation of several flashboard
dams. By June 5 the flow had decreased enough to allow the owners of
the Bieber and Ricketts dams to place them in operation. The river
is divided into two channels in this reach thus reducing the flows
each dam must pass. On July 7 the flow had receded to about 200 cubic
feet per second which allowed installation of the Lookout and Gerig dams.

By August 1, the first hay cutting in the valley was nearly completed and most ranchers were beginning to resume irrigation. However, large diversions by upstream users in Hot Springs Valley reduced the Pit River flow reaching Big Valley to 5 cubic feet per second. This necessitated the use of a rotation program. The watermaster allowed an irrigation allotment of 15 acre-feet for each cubic foot per second of second priority water right. Most of the water was required to fill the many channels and sloughs which had dried up during haying. Consequently, this period produced an insufficient irrigation.

On September 9 a similar and more successful irrigation rotation was completed. Releases from Hot Springs Valley then increased substantially, providing enough flow to allow two complete rotations of second priority allotments (four priorities) by the end of the irrigation season.

From August 2 to August 31 water was released from Roberts Reservoir for use by shareholders as follows:

Name	Shares	Acre-feet of Roberts Reservoir Water Used
Norris Gerig	5	100
Oral (Sam) Gerig	3	60
D. Babcock &		•
C. Hawkins	14	240
L. W. Kramer	2	75
Hunt Estate	2	90
Merlin Kennedy	1	30
Cyril Mamath	1	
Eicholz Ranch	l	100
Lewis Monchamp	_1_	
	20	695

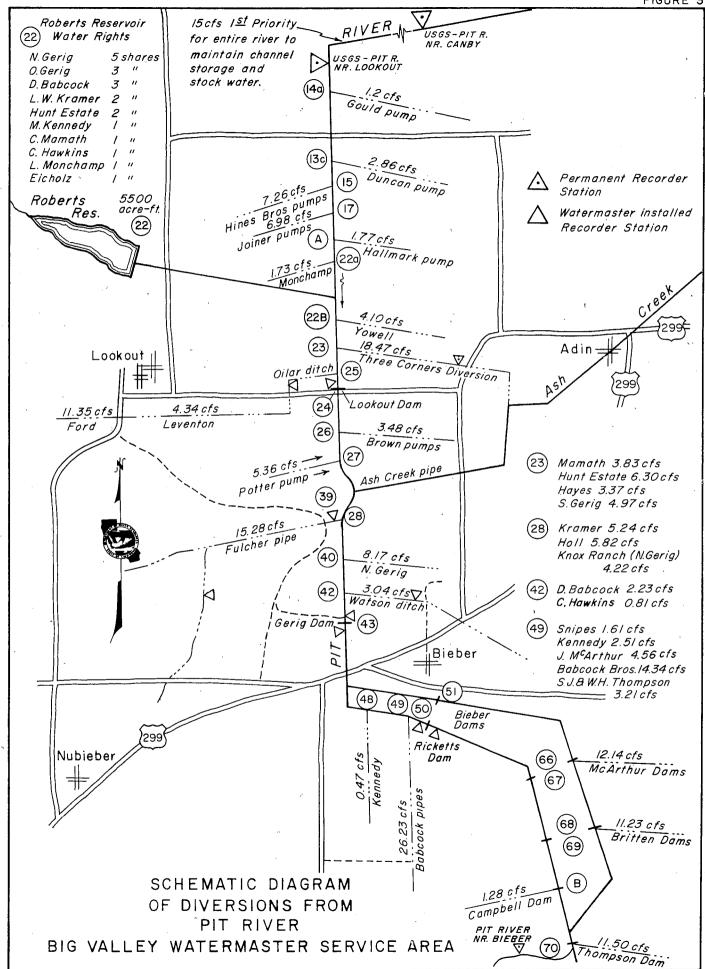


TABLE 6 DAILY MEAN DISCHARGE

Pit River near Canby

March through September 1967 (In second-feet)

Day .	. March	: Apri	<u> </u>	May:	June : Ju	ıly : August	:September
1 2 3 4 5							
6 7 8 9 10							
11 12 13 1 ¹ 4 15		publishe	d in U	J.S.G.S '	'1967 Water	ng. Will be Resources e Water Recon l Central Val	ds, ley."
16 17 18 19 20							
21 22 23 24 25			· *.				
26 27 28 29 30 31							
Mean				******			
Runoff i			`				

TABLE 7 DAILY MEAN DISCHARGE

PIT RIVER NEAR BIEBER

March through September 1967 (In second-feet)

Day	March	: April	May	: June :	July	:_August	:September	
1 2 3 4 5	1070 1250 1010 760 658	670 [.] 700 676 610 565	1610 1410 1320 1270 1260	1070 1130 1130 1160 1150	16 43 334 278 212	2.0 1.8 1.7 1.3	2.5 2.7 11 17 7.6	
6 7 8 9 10	585 580 610 605 610	545 550 565 625 730	1230 1210 1240 1340 1610	1110 1120 1050 1000 1140	231 209 179 138 89	0.8 0.7 0.6 0.6 0.6	15 12 6.4 13 8.8	
11 12 13 14 15	712 788 694 736 748	712 700 730 837 1130	2020 2200 2110 1950 1750	1160 1130 1070 949 872	47 32 21 15 41	0.6 0.6 0.5 0.4 0.8	6.8 3.1 0.7 0.3 0.2	: : ;
16 17 18 19 20	1400 2480 2930 2510 2090	1480 1390 1320 1380 1360	1560 1390 1360 1370 1420	781 700 625 570 442	54 58 36 48 3 ⁴	1.3 0.8 0.7 0.6 0.5	0.1 0.8 2.0 1.7 2.3	•
21 22 23 24 25	1640 1390 1240 1190 1060	1130 1010 1030 1360 1920	1480 1550 1510 1370 1270	458 418 366 346 264	18 14 20 24 16	0.4 0.4 0.5 0.6 0.7	2.7 1.8 1.8 3.8 1.7	
26 27 28 29 30 31	907 795 730 688 664 658	2410 2460 2240 2120 1850	1150 1100 1100 1070 1070	215 27 21 15 23	15 20 5.2 5.2 4.5 2.9	1.0 1.0 0.8 0.8 0.8	14 86 171 128 69	
Mean	1090	1160	1431	717	72.9	0.9	19.8	•
Runoff in acre-feet	67020	69030	88010	42670	4480	53	1180	•

Burney Creek Watermaster Service Area

and the state of t

The first of the first of the second of the second of the second

The Burney Creek service area is located in Shasta County near the town of Burney. There are 10 water right owners in the area with total allotments of 33.09 cubic feet per second. The source of water supply for this service area is Burney Creek, which enters the southern part of the service area and flows through Burney in a northerly direction to the Pit River. The portion of the valley served by this stream is approximately 11 miles long and two miles wide, and extends both north and south of Burney. The service area is at approximately 3,200 feet elevation.

A schematic drawing of the Burney Creek stream system is presented as Figure 4, page 31.

Water Supply

The water supply for Burney Creek comes from springs and snowmelt. Most of the watershed lies between the elevations of 4,000 and 7,500 feet on the northeast slopes of Clover Mountain and the west slopes of Burney Mountain. The creek normally has sufficient water to supply all demands until about the middle of June. The supply then gradually decreases until the end of July. For the remainder of the irrigation season, runoff from perennial springs keeps the flow nearly constant at approximately 40 percent of allotments.

The daily mean discharge of Burney Creek near Burney is presented in Table 8, page 33. The stream gaging station on Burney Creek is located below four points of diversion; consequently, the records do not show all of the available water supply of the creek.

Method of Distribution

The Burney Creek decree (see Table 1) sets forth a rotation schedule of distribution. The water users, however, have found it more beneficial to irrigate on a continuous-flow basis (one priority class

plus surplus allotments), which is now normal practice. The water allotted to the Greer-Cornaz Ditch is distributed in accordance with a supplemental court decree.

Water is diverted from Burney Creek, in most cases by means of low diversion dams, into ditches which convey it to the place of use. Lateral ditches are then used to irrigate the land. Scott Lumber Company uses a pump and pipeline to divert its allotment for industrial use.

and the stage of the second

territoria de la Carta

The state of the s

1967 Distribution

Watermaster service began May 1 in the Burney Creek service area and continued until September 30. Virgil D. Buechler, Water Resources Technician II, was watermaster during this period.

All allotments were distributed on a continuous flow basis. This practice, rather than that of rotation called for in the decree, has been used for many years under agreement of the water right owners. The available water supply for the 1967 irrigation season was above average due to above normal precipitation during the late winter and spring months.

Surplus flow was available to all users until August 10, at which time all irrigation diversions were regulated to 100 percent of first priority allotments. Throughout the remainder of the season the flow remained near this level.

the state of the s

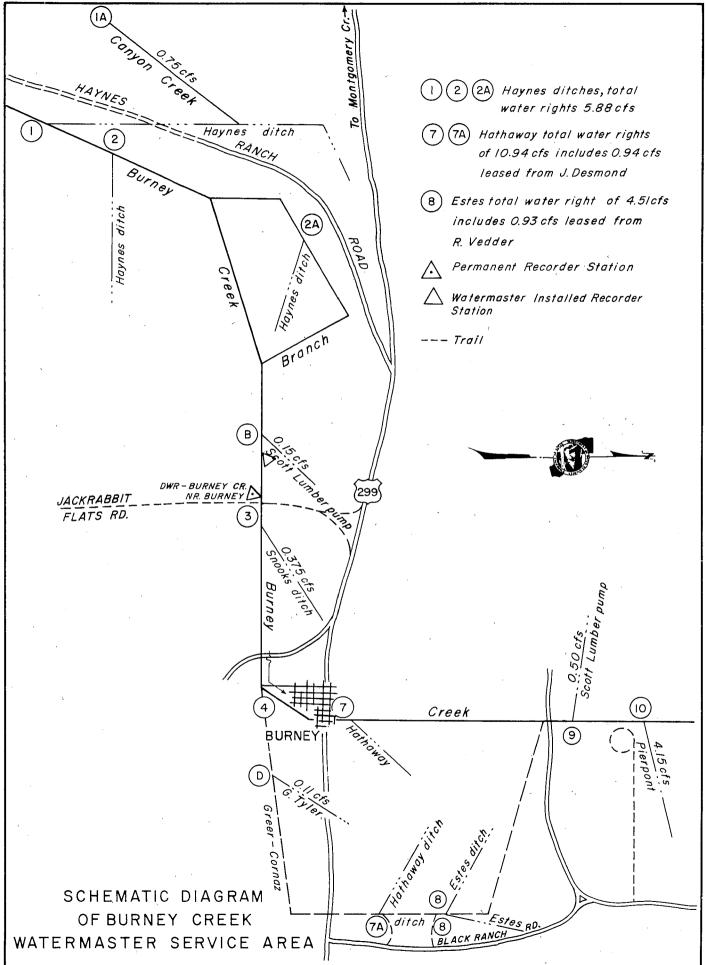


TABLE 8
DAILY MEAN DISCHARGE
BURNEY CREEK NEAR BURNEY
March through September 1967
(In second-feet)

Day :	March	: April :	May	: June :	July	: August	:September
1 2 3 4 5	78 79 78 72 70	127 122 118 112 109	90 88 93 98 112	286 292 248 176 153	56 54 52 50 48	19 18 18 19	14 15 16 16 14
6 7 8 9 10	69 71 72 74 95	120 124 117 118 117	141 139 165 236 334	153 157 156 224 182	45 43 40 41 40	20 23 24 21 20	12 12 12 13 13
11 12 13 14 15	130 96 84 82 81	110 102 101 114 119	343 279 242 260 297	157 186 202 141 134	40 37 31 30 29	20 20 20 18 15	14 15 15 13 12
16 17 18 19 20	271 269 262 201 199	114 107 107 108 109	346 383 415 469 536	129 119 115 113 105	30 30 29 27 27	16 16 16 18 16	14 16 21 18
21 22 23 24 25	191 198 299 225 189	104 96 92 93 102	539 602 636 588 489	107 103 95 83 77	27 31 30 26 23	15 16 15 16 16	18 19 18 16 16
26 27 28 29 30 31	165 147 155 148 138	112 113 113 107 96	435 402 411 367 312 277	72 70 68 64 60	23 24 23 23 22 20	16 16 16 15 15	16 16 16 15 16
Mean	143	110	327	141	33.9	17.6	15.3
Runoff in acre-feet	8780	6540	20080	8380	2080	1080	. 910

unu (១០ ១ នៅដែលស៊ីជ្រៅក្រៅ ២០

Butte Creek Watermaster Service Area

The Butte Creek service area is located in Butte County near the City of Chico. There are 35 water right owners in the area with total allotments of 219.71 cubic feet per second. Butte Creek is the major source of water supply. The area served by this stream extends from about four miles east of Chico to the diversion of the Great Western Canal, about 11 miles south. It contains about 20,000 acres of valley floor lands at an average elevation of 150 feet.

A schematic drawing of the Butte Creek stream system is presented as Figure 5, page 39.

Water Supply

Butte Creek rises on the west slope of the Sierra Nevada Mountains in the northeasterly portion of Butte County, between Humbug and Humboldt Passes, at elevations of 5,000 to 6,000 feet.

Snowmelt normally produces sustained high flows until about the end of June, after which perennial springs at the headwaters continue to produce flows of more than 40 cubic feet per second. Additional water is imported from the West Branch Feather River by means of the Hendricks (Toad Town) Canal through DeSabla Reservoir and Powerhouse into Butte Creek. This imported water is rediverted at Parrott Dam to the Parrott Ditch.

Records of the daily mean discharge at several stream gaging stations in the Butte Creek service area are presented in Tables 9 through 11, pages 41 through 43.

Methods of Distribution

Water is diverted from Butte Creek by pumping and by gravity diversions. Parrott Investment Company, M & T Incorporated, Dayton Mutual Water Company, Durham Mutual Water Company divert relatively large amounts of water into several ditches leading to their individual

distribution systems. Various methods of irrigation are in general practice. These include contour checks, strip or border checks, basin checks, furrows, wild flooding, and sprinklers. The use of sprinklers has increased in popularity within the past few years, especially for use on orchards.

Water diverted from the West Branch Feather River through the Hendricks Canal and Desabla Powerhouse in Butte Creek has, in the past, caused wide fluctuation in the Butte Creek flow. In accordance with "Memorandum and Order" entered May 10, 1949, by the Superior Court of Butte County, water users below Parrott Dam (where the imported water is rediverted) must be provided their natural flow allotments at all times without undue fluctuation caused by intermittent presence of imported water. For the past several years PG&E has maintained reasonably steady releases which have greatly simplified this rediversion problem.

The Butte Creek decree (see Table 1) established three priority classes for summer distribution purposes and, in addition, defined two surplus flow allotments.

1967 Distribution

Watermaster service began June 1 in the Butte Creek service area and continued until September 30. Ross P. Rogers, Water Resources Engineering Associate, was watermaster during this period.

The available water supply for the 1967 irrigation season was outstanding. More low priority allotments were served for a longer period than in any other irrigation season since watermaster service began in the area in 1943.

Flow past the Gorrill Land Company's diversion dam, which is usually cut off in late May or early June, continued until mid-July. Deliveries to the White Ranch, the only water right owner in the service area below Gorrill Dam, were then made through Hamlin Slough for the remainder of the season.

Enough water was available to satisfy all demands in the surplus class until the third week in July, as some water users in

this class did not request their full entitlement. Near the end of July the flow had decreased, but was still adequate to serve the three highest priorities in the surplus class (six priorities in this class from July through September).

deepl office

During the first week in August the flow in Butte Creek dropped rapidly. On August 7 there was enough water for about 50 percent of the first priority surplus class. Throughout the remainder of the month the flow decreased slightly, but still provided some water for this priority.

For a few days near the end of August and in early September the flow dropped below the surplus stage into the third and second priority allotments (three priorities) of the "regular summer schedule".

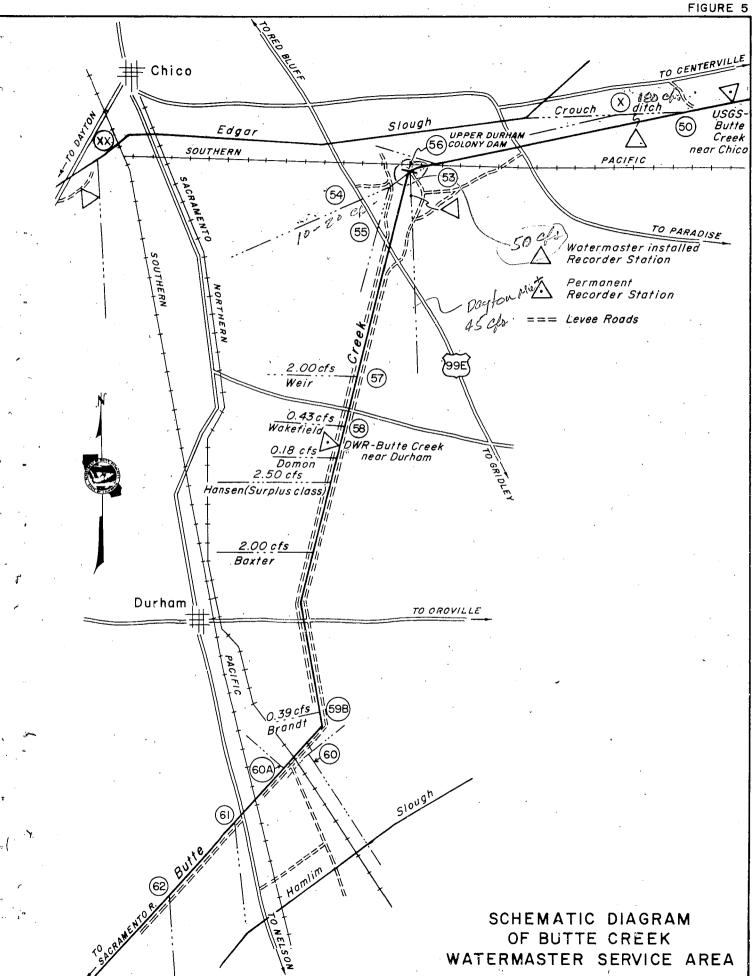
During the second week in September and continuing throughout the season the available water supply began to increase due to the gradual reduction of irrigation by many water right owners.

Special Occurrences

Several applications to appropriate surplus water during the spring months are presently under consideration by the State Water Resources Control Board, Division of Water Rights. If these applications are approved, the length of watermaster service to the area will probably be extended. Work would probably begin in late April or early May.

Several measuring devices are planned for construction prior to the beginning of the 1968 irrigation season. Those needed most are: a Parshall flume in the Gorrill Land Company's diversion ditch; a Parshall flume and two rectangular weirs to be placed in existing concrete structures in the Newhall Land and Farming Company's diversion system; a rectangular weir and concrete structure in Hamlin Slough; and repair of an existing Parshall flume in the Camenzind Brothers diversion ditch.

Diversion #	Water Right Owner	Amount in cfs	Remarks
Butte Creek			
50 X XX	M. & T. Incorporated M. & T. Incorporated Parrott Investment Company Parrott Investment Company Taylor Dayton Mutual Water Company	53.33 25.00 53.33 25.00 3.00 16.00	Imported water* Surplus class Imported water* Surplus class
	Dayton Mutual Water Company	3.33	Imported water*
	Water imported by PG&E from We Hendricks Canal and released i conveyance losses at DeSabla I	into Butte Creek,	
53	U. S. Department of Agricultu	re 2.00	
5 ¹ 4	Patrick Lavy Smith Roth	3.33 1.89 0.555 1.115	
55	Camenzind Brothers	3.11	
56	Durham Mutual Water Company Parrott Investment Company Carlson Bell Domon Brothers Logan Vernoga Konyn Bebich Setka Wheelock Total	44.70 2.00 0.48 0.39 0.67 0.01 1.447 0.40 0.446 0.447 0.26	
60	Newhall Land & Farming Compar Newhall Land & Farming Compar	-	Surplus class
60A	Phillips	0.66	
61	Gorrill Land Company (See Hamlin Slough)	1.00 20.70	Surplus class
62	White	1.00 9.50	Surplus class
Hamlin	Slough		
	Newhall Land & Farming Compar Gorrill Land Company (Total diversions from Butte exceed 21.70 cfs).	21.70	Slough not to



30,000 Darham

TABLE 9 DAILY MEAN DISCHARGE

BUTTE CREEK NEAR CHICO

						y and the same		
Day:	March	: April	May_	: June	: July	: August	:September	
1 2 3 4 5	415 405 405 395 385	852 765 744 751 883	712 712 728 760 790	816 747 679 674 704	344 334 319 309 302	188 187 187 183 182	183 184 180 176 175	
6 7 8 9 10	380 375 375 375 415	1740 1510 1160 1040 1040	780 920 1120 1250 1370	663 - 658 658 644 650 632	294 290 281 272 270	182 182 181 179 179	178 177 177 178 178	
11 12 13 1 ¹ 4	955 800 730 628 589	1070 947 891 883 830	1160 1060 980 990 1110	623 629 618 575 562	268 262 258 255 244	179 178 175 175 174	181 179 178 176 176	
16 17 18 19 20	3120 2420 1610 1320 1230	751 891 987 995 995	1270 1360 1380 1380 1400	555 563 551 566 547	233 232 220 219 212	174 173 170 170 170	176 176 157 179 176	
21 22 23 2 ¹ 25	1210 1140 1540 1270 1090	923 845 830 883 860	1420 1440 1440 1420 1300	518 487 459 443 429	211 205 200 196 197	170 171 171 168 168	174 176 180 177 176	
26 27 28 29 30 31	971 883 860 800 808 907	830 1070 963 852 772	1200 1130 1060 960 920 846	415 394 382 370 353	201 198 195 196 192	177 174 169 167 162	174 169 168 157 152	
lean	929	952	1109	564	245	175	175	**
Runoff in acre-feet	57140	56630	68170	33530	15070	10790	10400 =	Z5.

TABLE 10 DAILY MEAN DISCHARGE

BUTTE CREEK NEAR DURHAM

Day :	March	April	: May	: June	: July	: August	:September	•
1 2 3 4 5	380 354 354 337 319	988 889 854 863 970	778 752 752 744 761	710 658 590 568 582	97 94 89 84 68	35 32 30 29 23	8.3 10 10 12 12	
6 7 8 9 10	302 297 297 297 337	1798 1660 1286 1150 1123	727 838 997 1132 1268	539 532 518 518 518	60 60 54 53 50	23 19 20 18 18	12 12 11 12 22	
11 12 13 14 15	970 889 812 658 560	1190 1069 1006 988 934	1087 988 907 854 925	497 490 490 447 43 4	50 53 54 56 54	19 20 27 23 18	24 19 26 45 48	
16 17 18 19 20	2854 2578 1730 1484 1370	863 952 1096 1132 1150	1060 1132 1132 1132 1170	421 414 421 428 401	56 56 58 58 51	15 13 11 12 16	56 74 58 72 82	- - - -
21 22 23 24 25	1350 1286 1600 1420 1250	1051 961 925 988 952	1200 1230 1220 1210 1105	360 314 276 245 213	50 45 48 41 38	17 18 17 15 16	82 97 116 116 114	
26 27 28 29 30 31	1114 1024 979 925 943 1078	925 1123 1051 934 838	1006 934 898 804 770 718	187 166 148 122 108	36 36 34 35 38 39	18 22 16 17 14 7.8	108 102 108 105 105	,
Mean	973	1057	975	410	54.7	19.3	55.9	
Runoff in acre-feet	59800 - 26ల ు	62890 + 6268	59960 - 8210	24430 - 9100	3360 - 11,7/8 -	1190 9600 -	3330€=2 7070	14,960

TABLE 11 DAILY MEAN DISCHARGE

TOADTOWN CANAL ABOVE BUTTE CANAL

Day:	March	: April	: May	: June	July	: August	:September
1	119	115	124	119	119	80	100
2	119	119	126	119	118	81	98
3	118	120	125	118	116	80	95
4	117	120	125	117	116	78	93
5	117	115	124	118	116	80	93
6	118	114	124	118	117	80	94
7	119	116	124	119	115	81	94
8	119	125	124	124	114	80	95
9	119	125	124	124	107	80	95
10	123	127	126	124	106	80	95
11	114	124	125	122	111	81	98
12	102	121	125	119	114	81	96
13	100	120	123	119	110	80	97
14	109	124	124	119	105	81	95
15	113	125	123	119	102	78	95
16	119	125	122	117	98	82	95
17	114	123	123	117	95	81	89
18	127	117	123	118	90	80	76
19	126	121	122	119	87	82	95
20	124	120	121	119	85	81	92
21	121	121	119	119	83	83	93
22	121	122	122	118	81	83	94
23	126	123	122	119	78	83	96
24	124	123	122	119	76	81	94
25	125	124	129	119	81	81	92
26 27 28 29 30 31	126 125 126 126 121 117	124 125 123 121 122	130 130 122 121 121	118 119 118 118 118	87 83 82 82 80 81	86 81 80 79 79 93	91 89 86 72 69
Mean	119	122	124	119	98	81	92
Runoff in acre-feet	7330	7230	7600	7090	6020	4990	5470

Cow Creek Watermaster Service Area

The Cow Creek service area is located in Shasta County in the foothills east of Redding. There are 88 water right owners in the area with total allotments of 56.366 cubic feet per second. The major streams in this area are: North Cow Creek (commonly called Little Cow Creek), Cedar Creek (which is tributary to North Cow), Oak Run Creek, and Clover Creek. These creeks, which are all tributaries of Cow Creek, flow in a westerly or southwesterly direction through narrow valleys joining Cow Creek near the town of Palo Cedro. The service area is located in the narrow valleys along the several creeks and consists of small parcels separated by brush-covered hills. The entire area is about 25 miles long by 10 miles wide and varies in elevation between about 500 and 2,000 feet.

A schematic drawing of each major stream system in the Cow Creek service area is presented as Figures 6 through 6c, pages 49 through 55.

Water Supply

Water supply for this service area is derived mostly from springs and seepage with some early snowmelt runoff. The watershed consists primarily of low brush hills which do not accumulate a heavy snowpack. Relatively large amounts of precipitation during the winter normally produce substantial springs and seepage that flow throughout the irrigation season.

Cedar Creek flow is usually sufficient to supply all allotments until about July 15, after which time it steadily decreases throughout the remainder of the season.

The flow of North Cow Creek is generally adequate to supply all allotments. In dry years it is necessary to reduce allotments during the latter part of the summer.

The flow of Oak Run Creek is augmented by a first priority allotment of five cubic feet per second of imported water from the North Cow Creek watershed. The combined flow is generally adequate to supply all allotments throughout the season.

Clover Creek generally supplies enough water to meet all allotments throughout the season.

There were no stream gaging stations operated in the Cow Creek service area during 1967. Numerous stations were maintained in various diversion ditches.

Methods of Distribution

Water in the Cow Creek service area is used for domestic and stockwatering purposes and for irrigation of meadow hay, alfalfa, small orchards, and vegetable gardens. The alfalfa and hay lands are irrigated primarily by wild flooding, although some sprinklers are used. Furrows are used for irrigating gardens, and basins or checks and sprinklers are used for orchards. Much of the water applied is lost by surface runoff or by deep percolation, some of which returns to the creeks and thereby becomes available for rediversion downstream.

Only one priority allotment was provided in each of the Cow Creek service area decrees (see Table 1) except that the Oak Run Creek decree also contains a surplus allotment.

1967 Distribution

Watermaster service began June 15 in the Cow Creek service area and continued until September 30. Ross P. Rogers, Water Resources Engineering Associate, was watermaster during this period.

The available water supply for the Cow Creek service area was outstanding. An unusually late spring, combined with considerable rainfall and an excellent snowpack at higher elevations, produced the high sustained flows. Almost all water right owners received adequate water throughout the irrigation season.

Despite above average temperatures for extended periods, with their attendant high evaporation and ditch losses, a very successful irrigation season was enjoyed by most users.

Cedar Creek. Cedar Creek consistently has the lowest water

supply to water rights ratio in the Cow Creek service area. Even in years of adequate supply on nearby streams, the allotments on Cedar Creek are usually rationed severely.

However, because several water right owners did not use their full entitlements during the 1967 season all other users received an adequate supply throughout the summer.

North Cow Creek. The water supply in North Cow Creek was one of the best on record. Above normal spring rainfall contributed heavily to replenishment of the underground reservoirs which provide the major source of supply to the headwaters of the creek in the summer.

Even though most water right owners were diverting considerably more than their allotments, unused surpluses existed at the lower end of the creek until late July. Throughout August, historically a critical month, all users who could beneficially use surplus water were allowed to divert up to 200 percent of their allotments.

The flow in the creek decreased slightly in early September, requiring all diversions to be limited to about 125 percent of allotments for most of the month.

Oak Run Creek. The available water supply in Oak Run Creek was sufficient to supply all demands throughout the season. Several water right owners diverted amounts in excess of their allotments.

Water was available for irrigation of riparian lands downstream from the adjudicated area throughout the summer. This is an unusual occurrence.

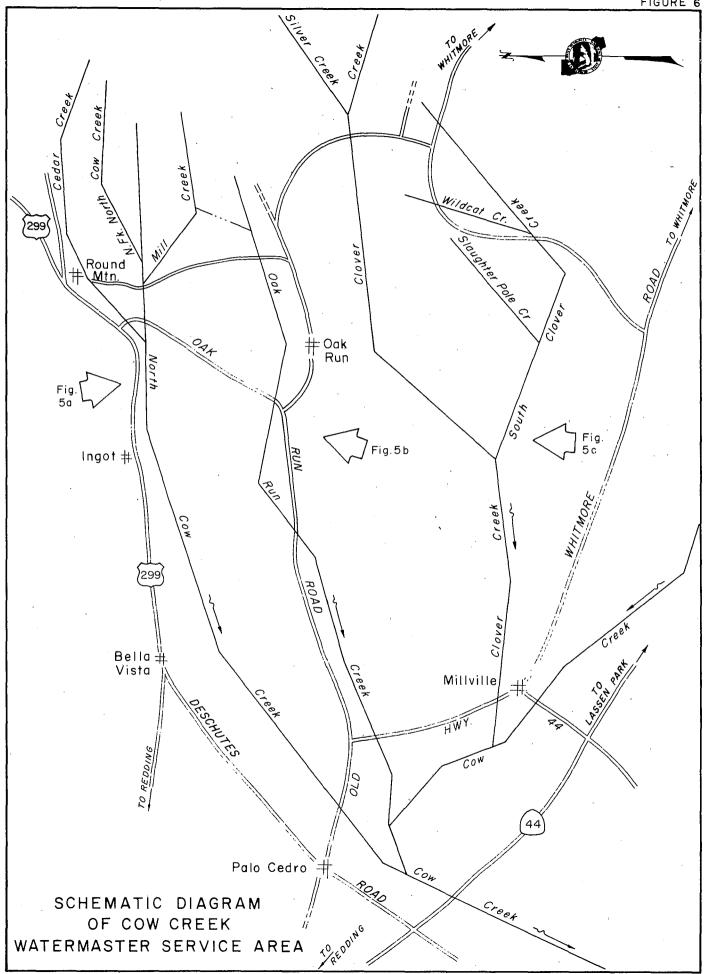
<u>Clover Creek.</u> The available water supply in Clover Creek was sufficient to supply all demands. Surplus water was available throughout the season.

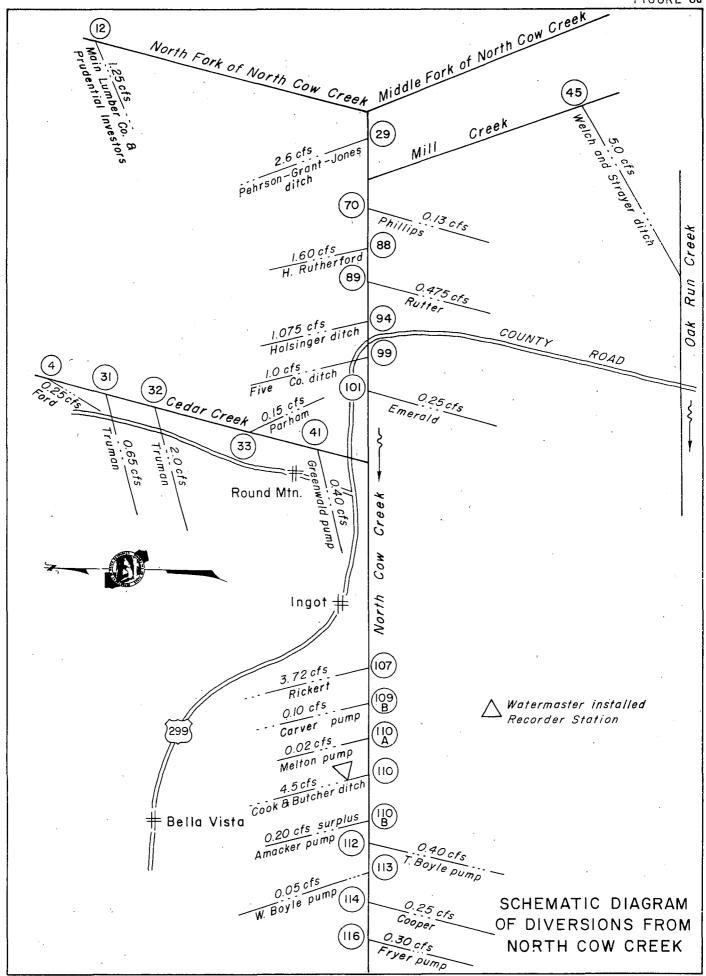
Several water right owners diverted as much as 125 percent of their allotments during the normally critical months of August and September

Special Occurrences

A two-foot concrete Parshall flume and a concrete control and spill-back structure with a screw-type metal headgate were constructed in the Worley Ditch on Clover Creek. Planned for construction prior to

the 1968 irrigation season are: Upper North Cow Creek - two concrete control structures with metal headgates and a concrete automatic division box; Lower Cow Creek - a concrete Parshall flume; Oak Run Creek - a wooden automatic division box and improvements to several existing division boxes; Clover Creek - a concrete automatic division box.





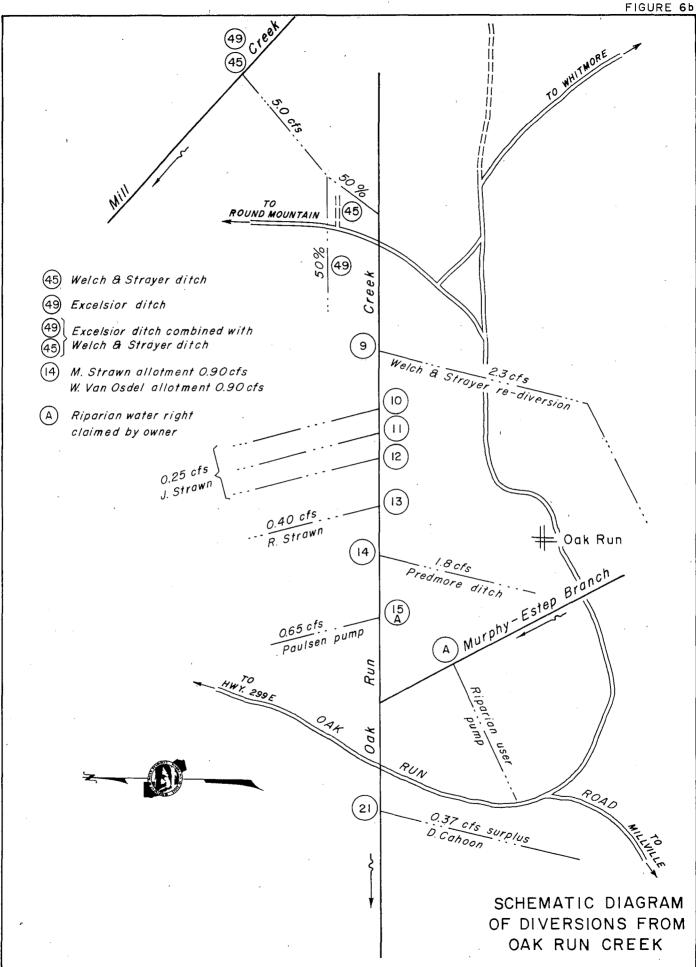


TABLE 12 DAILY MEAN DISCHARGE

North Cow Creek near Ingot

Day	_:_	March	_:_	April	_:_	May	_:_	June	-:_	July	_:	August	:September
1 2 3 4 5			V		,								
6 7 8 9 10								· .					
11 12	,				NO	RECORD	AVA	ILABLE					
13 14 15					Ŧ	'OR _. 196'	7 SE	ASON				,	
16 17 18 19 20		`		·	,					•			
21 22 23 24 25					`						,		
26 27 28 29 30 31													

Digger Creek Watermaster Service Area

and the second of the second o

e an un called the track of the control and the track

The Digger Creek service area is located in portions of southeastern Shasta County and northeastern Tehama County. There are 33 water right owners in the area with total allotments of 23.225 cubic feet per second.

Digger Creek forms a portion of the boundary line between Shasta County on the north and Tehama County on the south. It drains an area of approximately 45 square miles on the western slopes of mountains situated immediately west of Lassen National Park. The creek flows in a westerly direction through the town of Manton to its confluence with North Fork Battle Creek. Manton, the only community in the area, is located approximately 40 miles northeast of Red Bluff.

A schematic drawing of the Digger Creek stream system is presented as Figure 7, page 61.

Water Supply

Precipitation, occurring principally in the winter months, is typical of Northern California foothill areas. Snowmelt contributes to the early runoff but the summer streamflow is primarily from springs. In average runoff years there is sufficient flow in Digger Creek, with careful regulation, to satisfy all decreed allotments throughout the entire irrigation season. However, serious deficiencies occur in dry years.

The estimated daily mean discharge of Digger Creek below South Fork Branch is presented in Table 13, page 63.

Method of Distribution

There are four court decrees (see Table 1) on Digger Creek.

These decrees, in effect, have divided the water rights on the creek into two groups: the upper users and the lower users. The three upper users irrigate lands adjoining the stream, so that all water not consumptively used returns to Digger Creek. The lower users are located within

a three-mile reach of the stream and within a five-square-mile area. Very little runoff from the lower users returns to the creek.

The three upper users' water rights are absolute and not correlative to the lower users; therefore, allotments are not cut proportionally as Digger Creek flows decrease. The lower users, whose water rights total 12 cubic feet per second, have their allotments cut proportionally as the flow decreases. In effect, the upper users have first priority allotments and the lower users have second priority allotments.

Irrigation is done principally by wild flooding, although border checks and sprinklers are used on a few fields. Small diversion dams are placed in the stream channel to divert water into ditches for conveyance to the fields.

1967 Distribution

Watermaster service began July 1 in the Digger Creek service area and continued until September 30. Ross P. Rogers, Water Resources Engineering Associate, was watermaster during this period.

The available water supply in Digger Creek was outstanding. During the usually critical months of August and September all water users received 100 percent or more of their allotments. In addition, surplus quantities ranging from 10 to 25 percent of the total adjudicated water rights flowed unused from the service area.

Special Occurrences

The Harrison Ditch water rights were again diverted into the Crooker Ditch for about a quarter-mile and then rediverted to the Harrison Ditch. An agreement between the water right owners in both ditches finalizing this arrangement is expected to be signed shortly. An automatic concrete division box will then be constructed at the point of rediversion of the Harrison Ditch water.



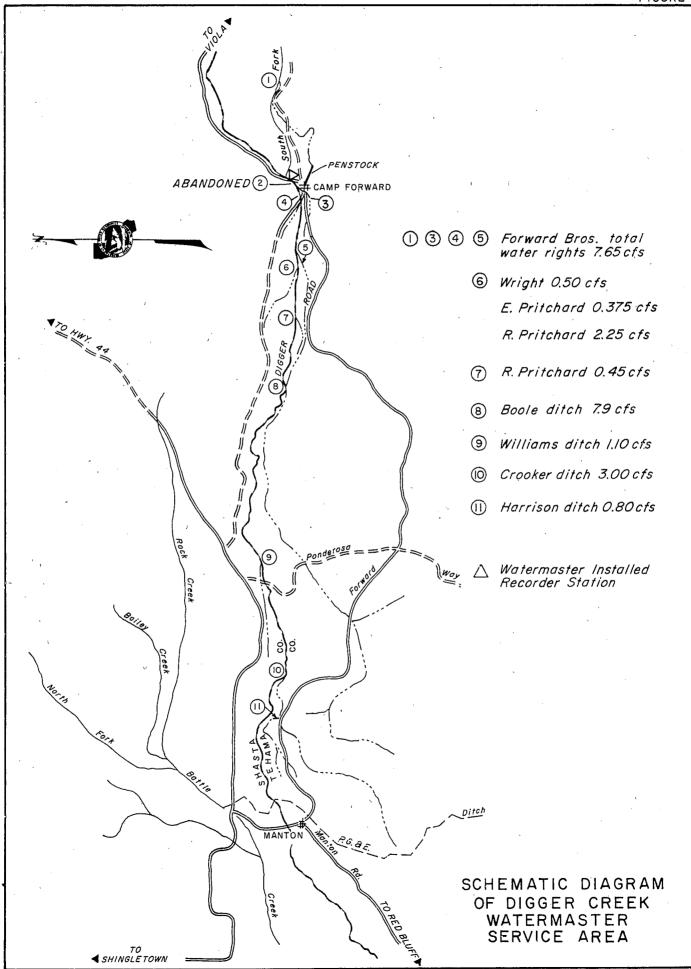


TABLE 13 DAILY MEAN DISCHARGE

Digger Creek below South Fork Branch

March through September 1967 (In second-feet) Intermittent Records Only

12 13 14 15 16 17 18 18 19 20 21 22 23 24 25 26 27 28 29 26 27 28 29 26 27 28 29 26 27 28 29 29	Day	_:_	March	_:_	April	_:_	May	-:_	June	_:_	July	: August	:Septembe
6 25 7 8 9 10 45 11 30 24 12 13 14 15 28 18 19 20 28 22 23 24 25 29 26 25 29	1 2							•			50	32	
6	3 4 5												
11 12 13 14 15 28 28 28 22 23 24 25 26 25 29	•	•	*			•							25
11 12 13 14 15 28 28 28 23 24 25 26 25 29	7 8 9						,						
12 13 14 15 16 17 18 18 19 20 21 21 22 23 24 25 26 27 28 29 26 27 28 29 26 27 28 29 26 27 28 29 29	10										45	. *	
16 17 18 19 20 21 22 23 24 25 26 27 28 29 20 28 28 29	11 12											30	24 .
17 18 19 20 21 22 23 24 25 26 27 28 28 29 20 28 29 20 20 20 20 20 20 20 20 20 20 20 20 20	13 14 15						•		-				
21 28 22 23 24 25 26 25 29	16										•		
21 28 22 23 24 25 26 25 29	17 18 19		,						·		1 ^{‡O}	·	28
26 36 27 28 26 25 29			,										
26 36 27 28 26 25 29	21 22 23 24		-									28	
27 28 29 26 25	25							,					
26 25 29 30	26										36	•	
30	=1 28 29											26	25
2 _T	30 31						,						
an ·	n												:

Hat Creek Watermaster Service Area

The Hat Creek service area is located in the eastern part of Shasta County north of Lassen Volcanic National Park. There are 44 water right owners in the area with total allotments of 135.535 cubic feet per second. Hat Creek, which flows in a northerly direction through the area, is the only source of water supply in the service area. The place of use is Hat Creek Valley, which is approximately 20 miles long and two miles wide. Commencing at a point about three miles south of the town of Old Station, the valley extends northward to the confluence of Rising River and Hat Creek. The irrigable lands, which consist primarily of volcanic ash, are interlaced with large outcroppings of volcanic rock.

Schematic drawings for both the upper and lower users' diversion systems from Hat Creek are presented as Figures 8 through 8b, pages 67 through 71.

Water Supply

The water supply of Hat Creek is derived from snowmelt runoff on Mount Lassen and from large springs. Snowmelt normally creates a high flow during May and June; however, the substantial portion of supply during the summer months comes from large springs which decrease only slightly in output. Only after a series of dry years does the flow of these springs fall much below 75 percent of the total allotments.

A record of the daily mean discharge of Hat Creek near the town of Hat Creek is presented in Table 14, page 73.

Method of Distribution

The Hat Creek decree (see Table 1) divides the water rights on Hat Creek into two groups (upper users and lower users) who use the water on a 10-day rotation schedule, with one priority class for each group as the basis for distribution. This requires a complete reregulation of all diversion every 10 days, alternating an irrigation supply to one group

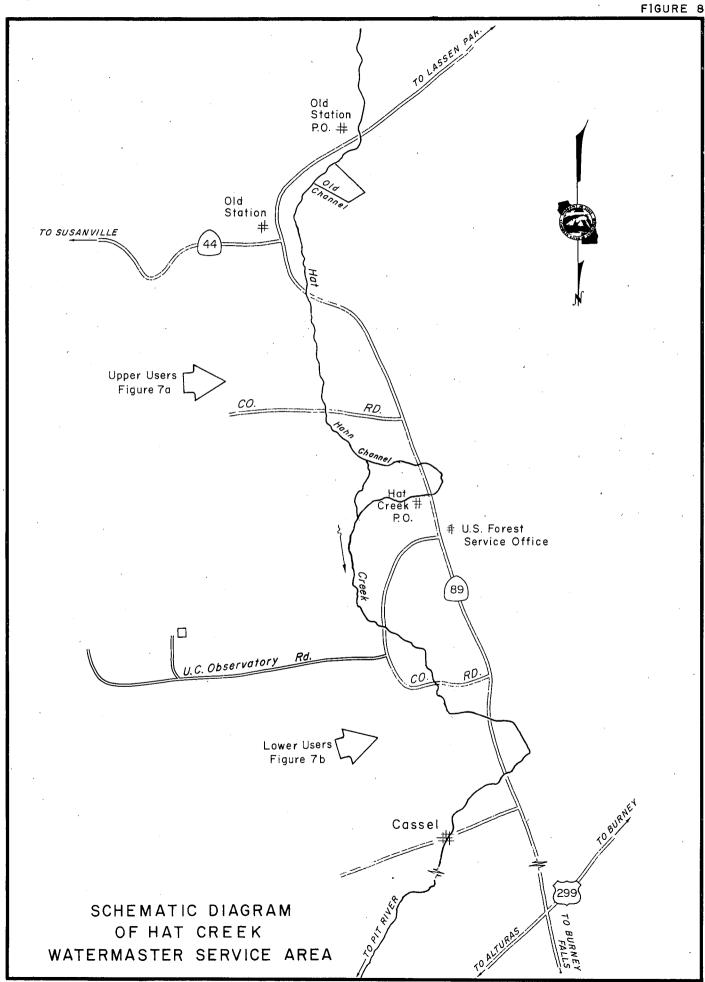
and a minimum flow (stockwater) to the other group.

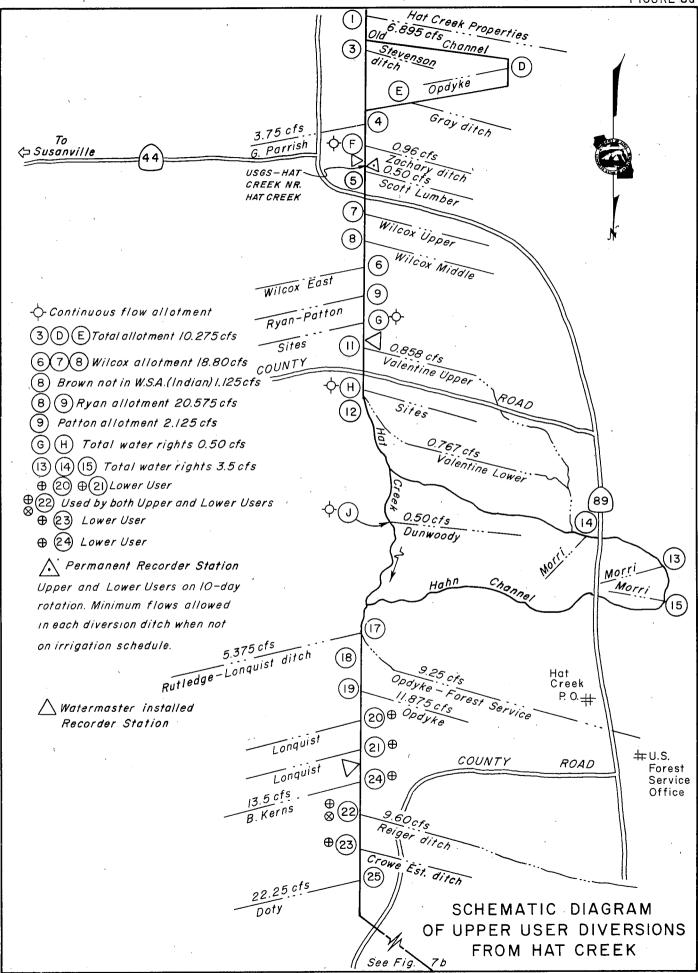
Most irrigation in the area is accomplished by wild flooding. Large heads of water are used to cover the land rapidly, thereby preventing excessive loss from percolation in the extremely porous soil. Diversion dams constructed across the creek serve to divert water into large ditches. The fields, many of which have checks and borders, are then flooded from the main diversion ditch or from laterals. A few domestic rights are met by pumping directly from Hat Creek.

1967 Distribution

Watermaster service began May 1 in the Hat Creek service area and continued until September 30. Virgil D. Buechler, Water Resources Technician II, was watermaster during this period.

The available water supply in Hat Creek was far above average through July. Therefore, the usual 10-day rotation schedule was not put into effect until August 1. The flow then gradually decreased until by August 19, it was necessary to regulate the lower users to 80 percent of their first priority allotments. The flow then remained essentially constant for the remainder of the season.





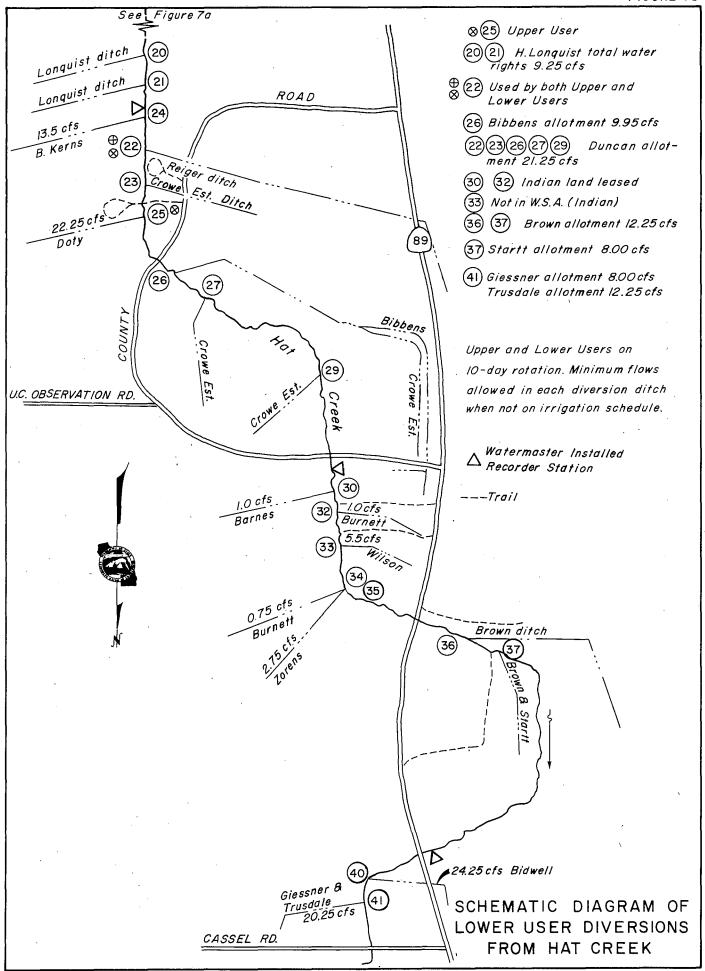


TABLE 14
DAILY MEAN DISCHARGE

HAT CREEK NEAR HAT CREEK

Day :	March	: April	: May	: June	July_	: August	:September
1	133	138	132	217	302	157	128
2	133	137	135	198	300	159	127
3	134	136	135	193	296	158	127
4	132	136	137	200	281	157	128
5	133	136	137	211	273	155	128
6	133	138	137	225	270	154	128
7	133	136	143	228	262	153	124
8	133	136	154	246	255	152	132
9	134	136	167	275	244	146	132
10	133	136	159	285	239	143	131
11	127	136	150	290	237	142	132
12	127	135	147	300	228	140	135
13	130	136	146	283	217	138	135
14	130	137	150	275	209	138	135
15	132	136	157	275	204	138	135
16	147	135	163	288	212	137	135
17	158	135	174	304	204	136	131
18	150	134	184	314	191	134	126
19	144	136	191	336	183	140	126
20	143	135	198	330	179	144	124
21	143	134	214	332	176	143	124
22	143	135	230	310	175	140	123
23	144	134	246	300	171	138	123
24	140	135	255	302	168	138	124
25	141	135	244	310	164	140	124
26 27 28 29 30 31	140 140 141 140 138 137	134 135 132 132 132	246 246 255 256 247 240	310 306 306 302 304	159 159 158 155 154 152	141 140 138 132 131 128	124 123 128 132 134
Mean	138	135	186	278	212	143	129
Runoff in acre-feet	8460	8050	11450	16570	13050	8790	7650

Indian Creek Watermaster Service Area

But the second of the second o

The Indian Creek service area is located in the north central part of Plumas County in the vicinity of the town of Greenville. There are 43 water right owners in the service area with total allotments of 97.015 cubic feet per second. The major sources of supply in the service area are Indian Creek and two major tributaries, Wolf Creek and Lights Creek. Indian Creek and its minor tributaries rises in the mountains east of the service area. It then flows through Gennessee Valley and through Indian Valley past the towns of Taylorsville and Crescent Mills to its confluence with the North Fork Feather River. Indian Creek is joined from the north by Lights Creek and Wolf Creek in the northwest part of the valley. The major place of use is in Indian Valley, which is about four miles long and two and one-half miles wide. The average elevation is about 3,500 feet.

A schematic drawing of each major stream system within the Indian Creek service area is presented as Figures 9 through 9c, pages 77 through 83.

Water Supply

The water supply in the Indian Creek service area is derived primarily from snowmelt runoff with springs and seepage maintaining some late summer flow. The flow of Wolf Creek is normally sufficient to supply all allotments until June 1, while Indian and Lights Creeks, with the exception of some tributaries, have sufficient flow to supply all allotments until July 1. After these dates, the flow steadily decreases throughout the season until by the end of August only a small portion of allotments is available.

A record of the daily mean discharge of Indian Creek near Taylorsville is presented in Table 15, page 85.

Method of Distribution

The basic method of irrigation in Indian Valley is wild flooding.

Small diversion dams are placed in the stream channels to divert the water into distribution ditches for conveyance to the fields. Small check dams, located throughout the fields in swales, help to spread the water over the ground. There is a limited amount of check and border irrigation in the valley. A few sprinkling systems are also in use.

The Indian Creek decree (see Table 1) establishes three priority classes for each of the major stream systems within the Indian Creek service area.

1967 Distribution

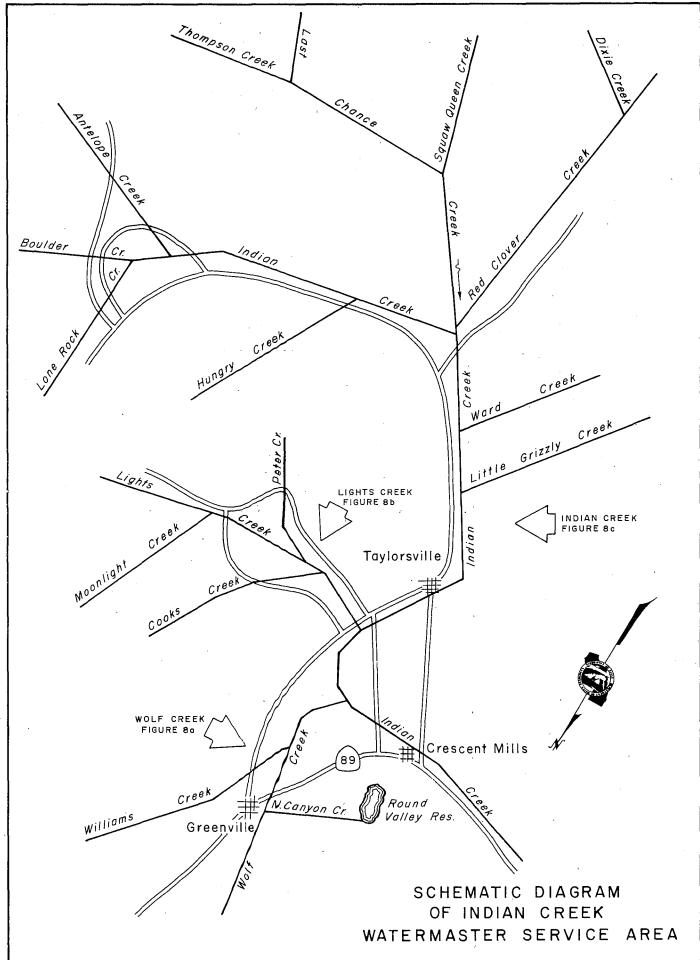
Watermaster service began in the Indian Creek service area on April 27 and continued until September 30. Harvey M. Jorgensen, Water Resources Engineering Associate, was the watermaster during this period.

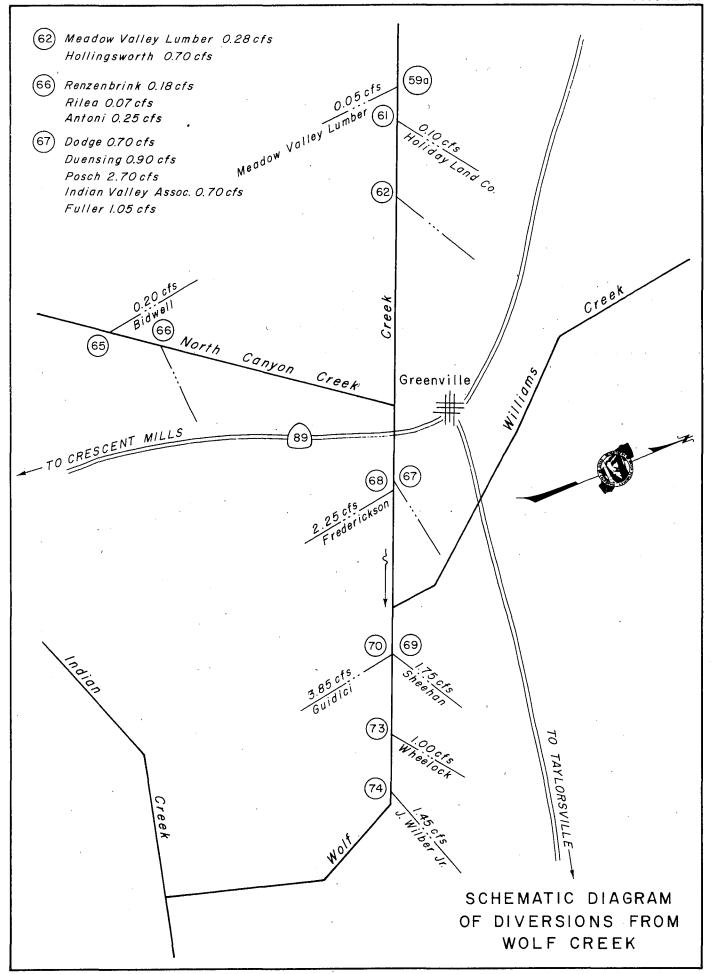
An above-average water supply existed in the service area during the 1967 season.

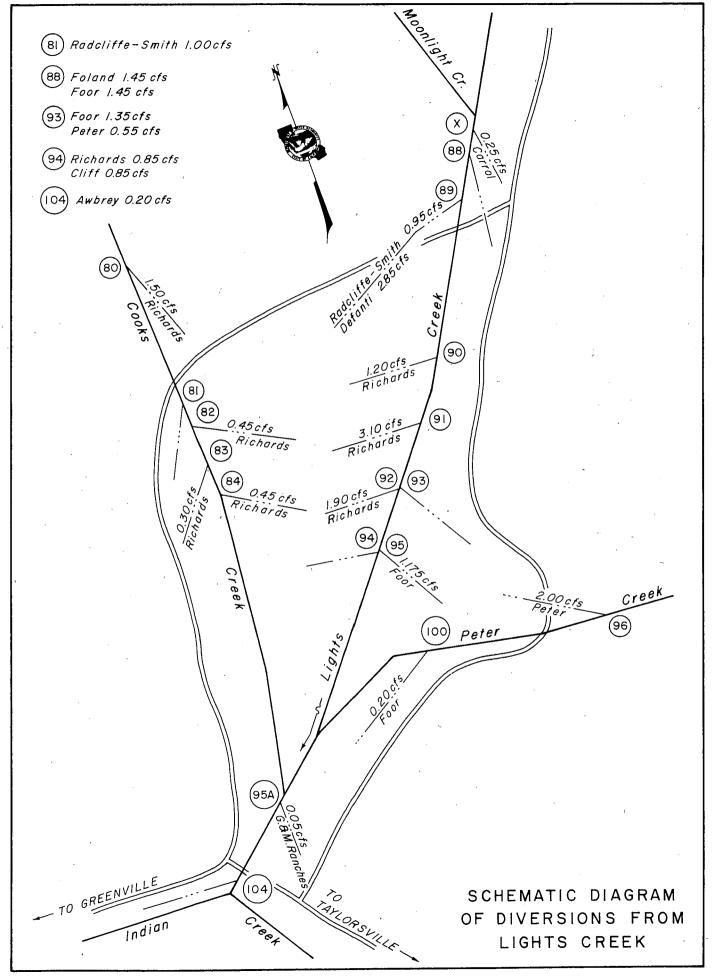
Wolf Creek. The available water supply of Wolf Creek was sufficient to satisfy all allotments (three priorities) until August 15. This supply was quite unusual. Some of the diversion ditches had to be turned off during the season due to over wetting of pastures.

Lights Creek and Tributaries. The water supply of Lights Creek was sufficient to satisfy all allotments (three priorities) until August 1. Flow in both Lights Creek and Cooks Creek remained above normal throughout the season. On August 14 there was two cubic feet per second in Lights Creek and one-half cubic foot per second in Cooks Creek. These observations were made at the county road bridge crossings. The creeks are normally dry in these reaches near the end of June.

Indian Creek. The available water supply in Indian Creek was sufficient to satisfy all allotments (three priorities) until August 1. On July 24 there was 20 cubic feet per second passing diversion 54, a normally dry reach at that time.







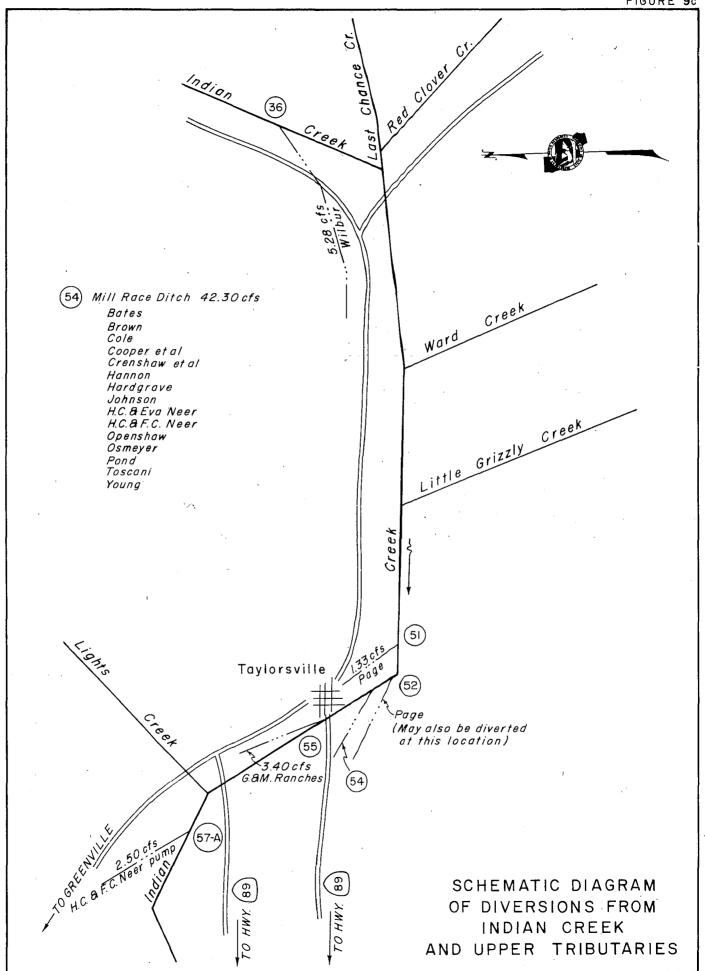


TABLE 15

DAILY MEAN DISCHARGE
INDIAN CREEK NEAR TAYLORSVILLE

							
Day :	March	: April	: May	: June	: July	August	:September
1	478	839	549	1650	443	100	57
2	530	745	662	1550	408	96	56
3	548	735	810	1610	375	93	56
4	471	749	1040	1650	337	90	59
5	431	682	1220	1810	307	82	64
6	416	660	1290	2080	286	79	62
7	430	674	1760	1770	267	77	60
8	453	709	2400	1730	252	77	58
9	519	879	3060	1720	236	75	56
10	647	981	2870	1810	219	73	56
11	546	847	2230	1620	213	71	54
12	495	751	1970	1750	201	70	54
13	459	895	1820	1960	191	69	56
14	478	1000	1840	1610	180	66	54
15	459	893	2130	1480	171	66	53
16	2350	763	2590	1400	180	63	53
17	4940	775	3090	1350	242	62	56
18	3420	810	3470	1310	201	61	62
19	2290	812	3440	1250	174	64	61
20	1820	692	3490	1210	159	59	61
21	1810	685	3650	1090	153	58	57
22	1920	650	3720	971	147	57	58
23	2040	613	3480	866	140	56	59
24	1800	630	3270	789	133	57	57
25	1540	624	2810	738	126	59	56
26 27 28 29 30 31	1310 1150 1260 1110 1000 920	593 615 608 584 555	2460 2290 2110 1910 1720 1670	675 616 567 527 485	115 110 107 105 101 100	63 60 60 59 . 58 58	56 55 53 54 55
Mean	1227	735	2285	1321	206 ~	69.0	56.9
Runoff in acre-feet	75450	43730	140500	78630	12650	4241	3388

Middle Fork Feather River Watermaster Service Area

THE WAR IN THE BOOK OF SHEET AND A STORE OF

The section of the second of the second section of the section is

The Middle Fork Feather River service area is located in the plateau area on the west slope of the Sierra Nevada in the eastern portions of Sierra and Plumas Counties. There are 96 water right owners with total allotments of 370.865 cubic feet per second.

Major sources of supply for this service area are the Middle Fork Feather River and its tributaries in Sierra Valley. The area is comprised of five major stream groups. These groups, starting in the north and east corner of the valley and proceeding in a southerly and westerly direction, are Little Last Chance Creek, Smithneck Creek, Webber Creek and tributaries, West Side Canal, and Fletcher Creek. The Middle Fork Feather River channel flows in a general northerly direction for approximately 20 miles through Sierra Valley. It then flows in a westerly direction. The major place of use is in Sierra Valley, which is about 15 miles long and 10 miles wide. The average elevation of the valley floor is 4,900 feet.

A schematic drawing of the Middle Fork Feather River service area is presented as Figure 10, page 91.

Water Supply

The major water supply in the Middle Fork Feather River service area is derived from snowmelt runoff, with minor flow from springs and from supplemental stored and foreign water.

, agreement of the state of the control of the state of the state of the control of the state of the

Natural flows of Little Last Chance Creek are supplemented by reservoir storage provided by Frenchman Dam which was constructed by the Department of Water Resources in 1961. Stored water is released and used as needed under the provisions of an annual contract. Smithneck Creek flow is normally sufficient to supply all allotments until about the middle of May. It then decreases rapidly until about June 1. Only first and second priority allotments are then available for the remainder of the season.

The natural flow of Webber Creek is normally sufficient to supply all allotments until the middle of May. At that time up to 60 cubic feet per second is diverted from Little Truckee River to supplement the flow. This imported water is diverted through the Little Truckee Ditch into Cold Stream and then into Webber Creek for use by shareholders in the Sierra Valley Water Company. This supplemental supply decreases rapidly during July, producing only a small quantity during the latter part of the season. The West Side Canal streams normally supply all allotments until the first part of June. The flow then gradually declines throughout the season.

The flow of Fletcher Creek and Spring Channels normally supplies all allotments until July 1. The flow then gradually declines for the remainder of the season.

Records of the daily mean discharge of several stream gaging stations in the Middle Fork Feather River service area are presented in Tables 16 through 19, pages 93 through 96.

Method of Distribution

Wild flooding is employed by the majority of the water users to irrigate their fields. Small diversion dams are placed in the stream channels to divert the water into individual distribution systems. Check dams are constructed in the swales to implement flooding once the water reaches the fields.

The Middle Fork Feather River decree (see Table 1) establishes the number of priority classes for each of the major stream systems within the Middle Fork Feather River service area as follows: Little Last Chance Creek - five; West Side Canal Group - five; Fletcher Creek and Spring Channels - three; Sierra Valley Mutual Water Company - one; Webber Creek and tributaries - six; and Smithneck Creek - five.

1967 Distribution

Watermaster service began April 1 in the Middle Fork Feather River service area and continued until September 30. Joe Nessler, Water Resources Engineering Associate, was watermaster during this period. He was assisted by Conrad Lahr, Water Resources Technician II.

An above-average water supply existed in the service area during the 1967 season.

Little Last Chance Creek. Frenchman Dam and Reservoir began its sixth season of operation in 1967. Agreements concerning storage and distribution were again negotiated with the users in this stream system. The resulting changes in procedures and specific details of distribution and operation are covered in a separate report prepared by the Operations Section of the Sacramento District.

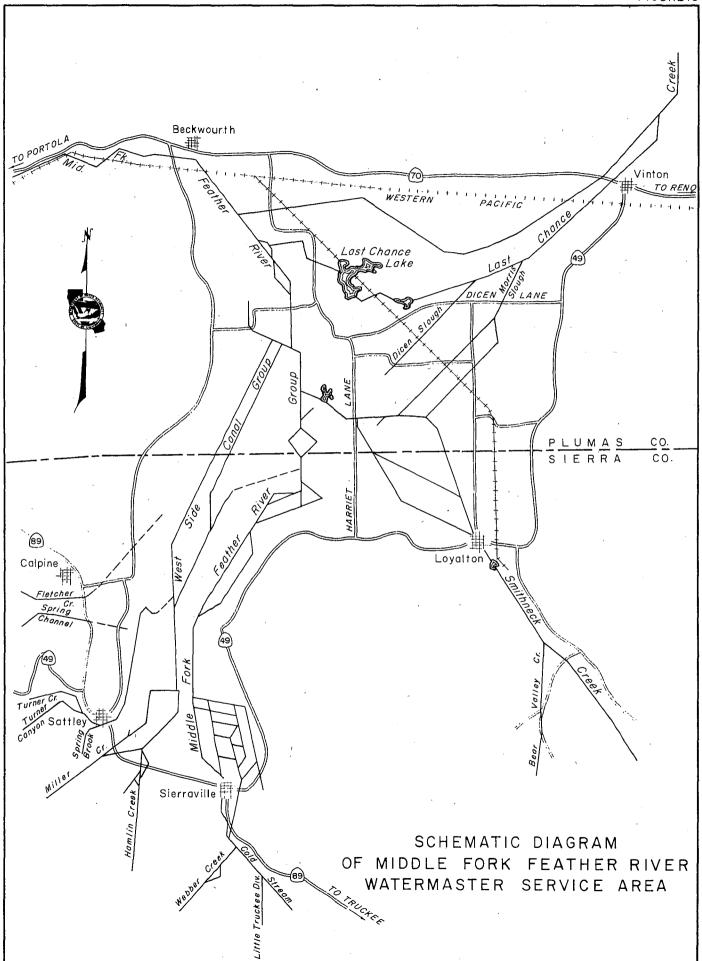
West Side Canal Group. The West Side Canal Group, consisting of Hamlin, Miller, and Turner Creeks, received a sufficient water supply to satisfy all allotments (five priorities) until about August 1. Throughout the remainder of the season the supply was enough to meet demands.

Fletcher Creek and Spring Channels. The available water supply was sufficient to satisfy all allotments (three priorities) throughout the season.

Sierra Valley Mutual Water Company. The Little Truckee Ditch conveyed 2,314 acre-feet of water to the Sierra Valley Mutual Water Company from July 7 through September 30, 1967. Water was distributed to shareholders in accordance with schedule 9 of the Middle Fork Feather River decree.

Webber Creek and Tributaries. The natural flow of Webber Creek was sufficient to supply all allotments (six priorities) until July 1. Combined with the water imported from the Little Truckee River, beginning July 7, the total supply was sufficient to satisfy all allotments of the Sierra Valley Mutual Water Company shareholders until August 1. The natural flow then decreased gradually so that only first and second priority allotments were being served at the end of the season.

Smithneck Creek. The available water supply on Smithneck Creek was sufficient to satisfy all allotments (five priorities) until June 1. Although the flow slowly receded, all demands continued to be met until haying time. Irrigation requirements then dropped sharply. Stockwater was available throughout the remainder of the season. The usual practice of rotation of water rights was not necessary.



TABLE, 16

Little Last Chance Creek near Chilcoot March through September 1967 (In second-feet)

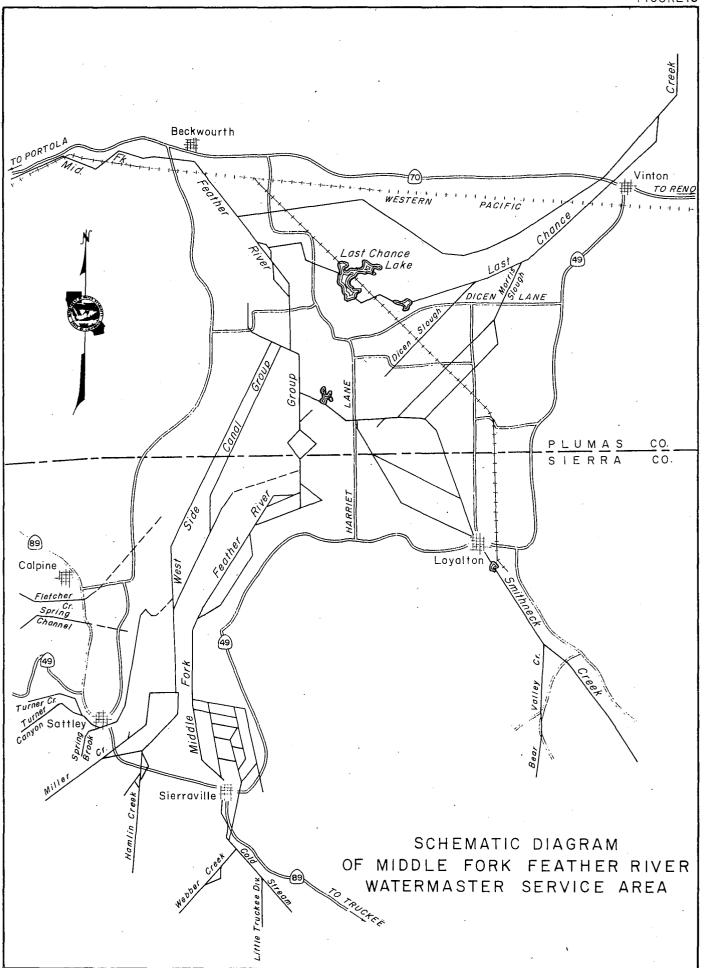
Day :	March	: April	: May	: June	: July	· August	:September
1 2 3 4 5	4.5 4.8 4.8 4.3 4.1	5.2 4.5 4.5 4.3 4.3	62 65 75 90 116	283 259 239 223 216	52 46 40 34 30	44 50 60 62 65	63 52 50 50 35
6 7 8 9 10	4.1 4.1 4.8 5.2	4.3 4.5 4.8 5.5 5.8	130 159 205 264 298	213 206 198 196 198	27 24 22 19 18	81 93 95 124 124	25 24 24 24 25
11 12 13 14	4.8 5.5 5.5 4.1 4.0	6.2 6.9 7.7 7.3	291 288 267 257 271	193 216 244 235 223	16 18 16 21 25	124 121 121 121 121	25 25 25 25 25 25
16 17 18 19 20	24 22 15 12 11	6.9 7.3 7.3 7.7 12	298 363 413 453 476	211 196 183 172 164	31 35 32 32 35	121 121 121 121 90	31 41 41 31 25
21 22 23 2 ⁴ 25	11 10 10 9.1 8.2	20 28 35 43 47	490 514 524 509 481	152 136 124 108 95	35 35 35 35 35	62 69 75 90 102	25 15 8.2 8.2 8.6
26 27 28 29 30 31	7.3 6.9 6.5 5.8 5.5	50 56 58 60 62	444 409 379 343 308 292	86 77 69 63 56	35 35 37 39 43 44	102 102 102 86 77	6.2 4.3 4.3 4.3 4.3
Mean	7.7	19.4	308	174	31.6.	94•3.	25.1
Runoff in acre-feet	476	1150	18910	10380	1950	5800	1500

TABLE 17 DAILY MEAN DISCHARGE LITTLE TRUCKEE DITCH AT HEAD

Day	-:-	March	-:_	April	:_	May:	June	_;_	July	August	September
1 2 3 4 5							. 3 .			37 37 36 34 29	11 11 10 14 13
6 7 8 9 10									5.7* 8.6 8.2 7.9	26 24 21 20 18	11 10 9.2 8.9 8.6
11 12 13 14 15									7.9 7.9 7.6 7.6	17 16 14 13 17	8.2 8.2 7.9 7.6 7.3
16 17 18 19 20									7.3 7.0 7.0 6.7 6.5	21 20 20 19 18	7.0 7.3 13 6.5 1.6
21 22 23 24 25					•				6.2 6.2 6.2 8.2 12	16 15 15 16 19	1.5 1.5 1.5 1.5
26 27 28 29 30 31									12 29 38 38 38 38	26 18 16 14 13 12	1.4 1.4 1.4 1.4 1.4
Mean									13.4	20.5	6.5
Runoff i									665	1261	388

^{*} Beginning of record

^{**} End of record



North Fork Cottonwood Creek Watermaster Service Area

The North Fork Cottonwood Creek service area is located in the southwestern part of Shasta County near the towns of Ono and Gas Point. There are nine water right owners in the area with total allotments of 30.30 cubic feet per second.

North Fork Cottonwood Creek and its tributaries, Moon Creek and Jerusalem Creek, are the major sources of water supply in the area. These creeks rise on the east slopes of the foothills of the Coast Range Mountains. North Fork Cottonwood Creek flows in a southeasterly direction to its confluence with Cottonwood Creek near Gas Point. The area is characterized by high summer temperatures and moderate rainfall. The irrigable land consists of sparsely scattered parcels separated by steep, brushy hills. These lands are at about the 1,000-foot elevation.

A schematic drawing of the North Fork Cottonwood Creek stream system is presented as Figure 11, page 99.

Water Supply

Snowmelt contributes to the flow in North Fork Cottonwood Creek during the early weeks of the irrigation season. However, perennial springs provide the major source of supply during the summer and fall months. The flow is normally sufficient to supply all demands.

A record of the daily mean discharge of North Fork Cottonwood Creek near Igo is presented in Table 20, page 101. This stream gaging station is located downstream from most points of diversion on the creek but gives a general indication of the water supply.

Method of Distribution

The general practice throughout the area is to irrigate by wild flooding. One water user, however, pumps directly from the creek using a sprinkler system to irrigate his crops. Pumping was necessary at this diversion point because the irrigated land was higher in elevation

than the creek channel.

The North Fork Cottonwood Creek decree (see Table 1) provides for distribution of water on an equal and correlative basis for all users - one priority class.

1967 Distribution

Watermaster service began July 1 in the North Fork Cottonwood Creek service area and continued until September 30. Ross P. Rogers, Water Resources Engineering Associate, was watermaster during this period.

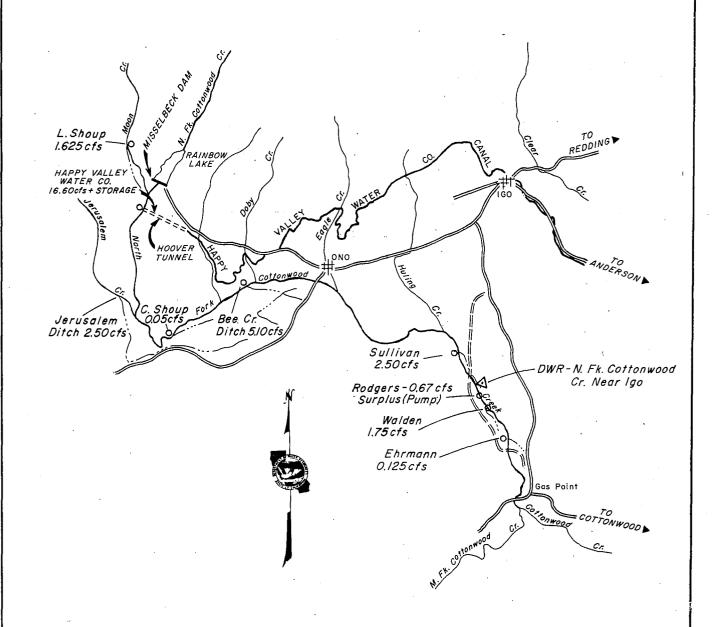
The available water supply in North Fork Cottonwood Creek was outstanding. The stream gaging station near Igo recorded a total of 59,170 acre-feet of runoff between April 1 and September 30. This is approximately 190 percent of the mean for an eleven year period of record.

All demands were met and surplus flows existed throughout the season. Several water right owners, however, did not use any of their allotments.

Special Occurrences

Missellbeck Dam was declared unsafe by the Department of Water Resources' Division of Dam Safety. Therefore, an order was issued to hold the elevation of the lake just above that of the outlet pipes. This may result in some water shortages and distribution problems until satisfactory repairs are made and the reservoir is again allowed to fill.

At the request of a water right owner on Duckett Creek (an area excluded from watermaster service in 1940), a review of the adjudicated water rights was made. This study showed that during critical low-flow periods in August and September, the two existing water rights are essentially independent of each other. Therefore, the area will continue to be excluded from the watermaster service area.



A Permanent Recorder Station

SCHEMATIC DIAGRAM
OF N. FK. COTTONWOOD CR.
WATERMASTER SERVICE AREA

TABLE 20 DAILY MEAN DISCHARGE

NORTH FORK COTTONWOOD CREEK NEAR IGO

Day	: March	: April	: May	: June	July	August	:September
1 2 3 4 5	168 165 156 152 149	.382 294 280 289 349	266 262 262 266 271	284 289 242 219 219	69 66 66 64 61	20 20 20 20 18	7·3 7·9 7·9 7·9 9·2
6 7 8 9 10	140 135 129 124 200	926 753 593 599 676	276 321 397 588 476	204 196 185 175 165	61 59 52 49 47	18 18 16 16 16	9.8 10 9.8 10
11 12 13 14 15	215 219 196 193 196	849 683 582 492 460	392 354 321 307 316	149 159 140 126 92	45 45 42 42 38	16 14 14 14 12	11 10 9.2 9.2 8.5
16 17 18 19 20	571 369 294 266 423	438 664 498 476 454	335 335 316 303 298	83 80 78 78 106	40 38 37 37 35	12 12 12 10 9.8	7.9 10 13 12 10
21 22 23 24 25	373 335 326 303 284	412 423 465 382 349	294 280 276 266 253	101 95 95 92 87	35 33 33 33 33	9.2 9.2 9.2 9.2	9.2 9.2 9.2 9.2
26 27 28 29 30 31	266 249 245 242 335 402	330 358 316 284 271	242 234 226 226 219 215	86 83 80 75 72	25 22 22 22 22 20	8.5 7.9 7.3 6.9 7.3 7.3	9.2 9.2 8.5 7.9 8.5
Mean	252	478	303	138	41.7	12.9	9.3
Runoff in acre-feet	15510	28420	18630	8210	2560	791	555

North Fork Pit River Watermaster Service Area

The North Fork Pit River service area lies along the west slopes of the Warner Mountains in northeastern Modoc County and extends from the Oregon border about 45 miles southward to a point just below Alturas. There are 95 water right owners in the area with total allotments of 215.065 cubic feet per second.

A number of small independent stream systems, rising on the west slope of the Warner Mountains and generally following a westerly direction, comprise the major source of water supply. Three of these streams, New Pine Creek, Cottonwood Creek, and Davis Creek, are tributary to Goose Lake. The other streams in the service area are all tributary to the North Fork Pit River. They are: Linville Creek, Franklin Creek, Joseph Creek, Thoms Creek, and Parker Creek. Shields Creek and Gleason Creek are tributaries to Parker Creek. The North Fork Pit River flows in a general southerly course from the south rim of Goose Lake to the confluence with the South Fork Pit River immediately below Alturas. The streams tributary to Goose Lake do not contribute to the flow of the North Fork Pit River since the lake has not spilled into the river for nearly 100 years.

The place of use in the northern half of the area lies in a relatively long, narrow, sloping strip extending between the eastern shore of Goose Lake and the foothills of the Warner Mountains. The places of use in the southern half of the area, consisting of the North Fork Pit River and its tributaries, are primarily in the narrow valleys bordering the streams.

A schematic drawing of each major stream system within the North Fork Pit River service area is presented as Figures 12 through 12k, Pages 109 through 131.

Water Supply

The streams which serve the area are fed by snowmelt runoff and

springs in the Warner Mountains. A large portion of the runoff occurs early in the spring, decreasing rapidly in May and June. The watershed of New Pine Creek, however, is at a higher elevation and maintains a good supply well into the summer. After the snowpack is depleted, perennial springs at the headwaters of the tributaries are the main sources of water supply. Linville Creek, with its small drainage basin, depends almost entirely on the springs at its head. Gleason Creek, Thoms Creek, and Cottonwood Creek are usually dry in August, except during years of above-average water supply.

Some supplemental water is stored in small reservoirs throughout the area, none of which are operated by the watermaster. However, the inflows to some of these reservoirs are under the watermaster's jurisdiction.

Records of the daily mean discharge at several stream gaging stations in the North Fork Pit River service area are presented in Tables 21 through 32, pages 133 through 144.

Methods of Distribution

Irrigation is accomplished primarily by wild flooding from random field ditches along high spots in the meadows. Various types of diversion structures are used to divert the natural streamflow into small earth ditches which convey it to the meadows. At present there is a limited amount of sprinkler irrigation, some by naturally developed pressure and some by direct pumping from small sumps in the ditches. Subirrigation by the use of large flashboard dams to raise the water level in the stream channel is being practiced on the North Fork Pit River between Parker Creek and Alturas.

The several decrees (see Table 1) which apply to the North

Fork Pit River service area establish the following number of priority

classes for the various stream systems: New Pine Creek - four; Cottonwood

Creek - six; Davis Creek - four; Linville Creek - two; Franklin Creek
four; Joseph Creek - four; Thoms Creek - three; Parker Creek - four;

Shields Creek - four; Gleason Creek - five; and North Fork Pit River - five.

1967 Distribution

Watermaster service began April 20 in the North Fork Pit River service area and continued until September 30. Charles H. Holmes Assistant Civil Engineer, was watermaster during this period.

The available water supply during the spring months was excellent throughout the service area. Because of a very warm summer, however, streamflows during the latter part of the season were at or near average conditions.

New Pine Creek. Surplus water was available to New Pine Creek water right owners throughout the period that the proration or correlative system of distribution was in effect (until June 30). Commencing July 1, in accordance with provisions of the decree, distribution was based on the priority system (four priorities). Fourth priority allotments received some water until July 23. All third priority allotments were satisfied until August 7. Thereafter, the flow gradually decreased until approximately 70 percent of second priority allotments were being met at the end of the season.

Cottonwood Creek. A sufficient water supply existed in Cottonwood Creek to satisfy all allotments (six priorities) until late spring. The fourth priority allotments were served until late June. Thereafter, the flow decreased gradually, reaching first priority on August 1. By the end of the season the flow had decreased until only about 15 percent of first priority allotments were served.

Davis Creek. The available water supply in Davis Creek was sufficient to satisfy all allotments (four priorities) until June 2. One hundred percent of third priority allotments were served until June 22. The flow then steadily decreased, reaching 100 percent of the second priority allotments on September 1. At the end of the season the flow had receded slightly to 80 percent of first priority allotments.

Linville Creek. The available water supply in Linville Creek decreased steadily from the time watermaster service began until the end of the irrigation season. A small percentage of second priority allotments (two priorities) was supplied from May 18 to May 24. The available supply for first priority allotments ranged between 100 percent

on May 25 to 60 percent at the end of the season.

Franklin Creek. The available water supply in Franklin Creek was sufficient to satisfy all allotments (four priorities) until June 8. One hundred percent of third priorities were served until June 10. The flow then gradually decreased until mid-September when 95 percent of second priority allotments were being served. On September 15 the winter schedule of priorities became effective. Under this schedule, only 50 percent of second priority allotments were met.

Joseph Creek. A surplus water supply existed in Joseph Creek until July 6. The flow then receded rapidly until on July 22 only first priority allotments (four priorities) were served. Thereafter, the flow gradually decreased to 50 percent of first priority allotments at the end of the season.

Thoms Creek. A sufficient water supply existed in Thoms Creek to meet all allotments (three priorities) until July 11. The flow then gradually decreased to 6 percent of third priority allotments at the end of the season.

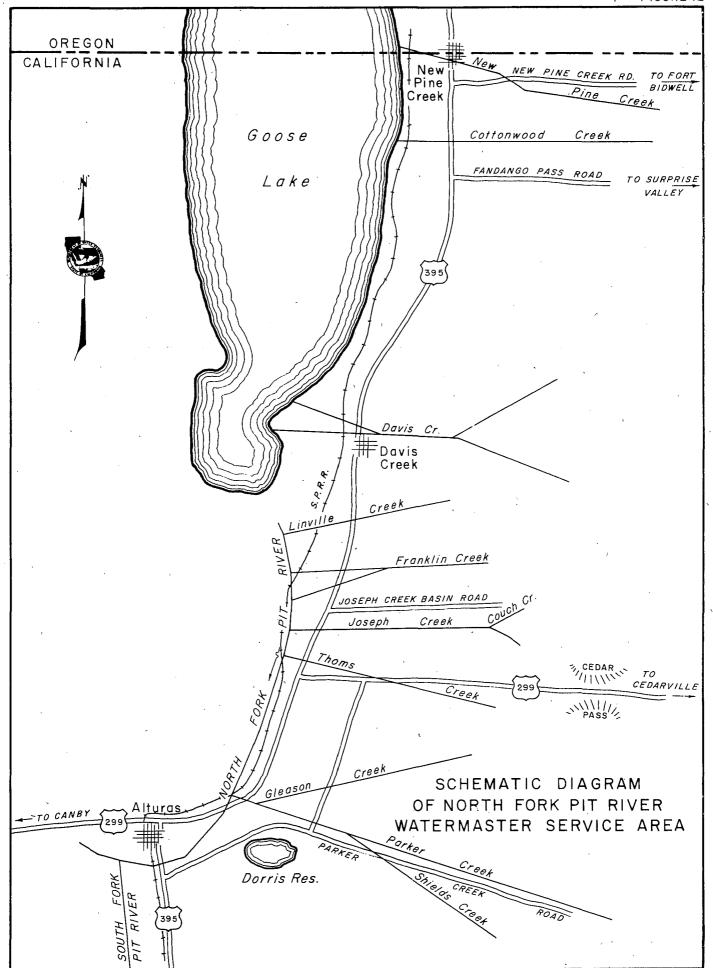
Gleason Creek. The available water supply in Gleason Creek was sufficient to satisfy fourth priority allotments (five priorities) until June 2. The flow then rapidly dropped to 100 percent of second priority allotments by July 13. By late July the creek was dry.

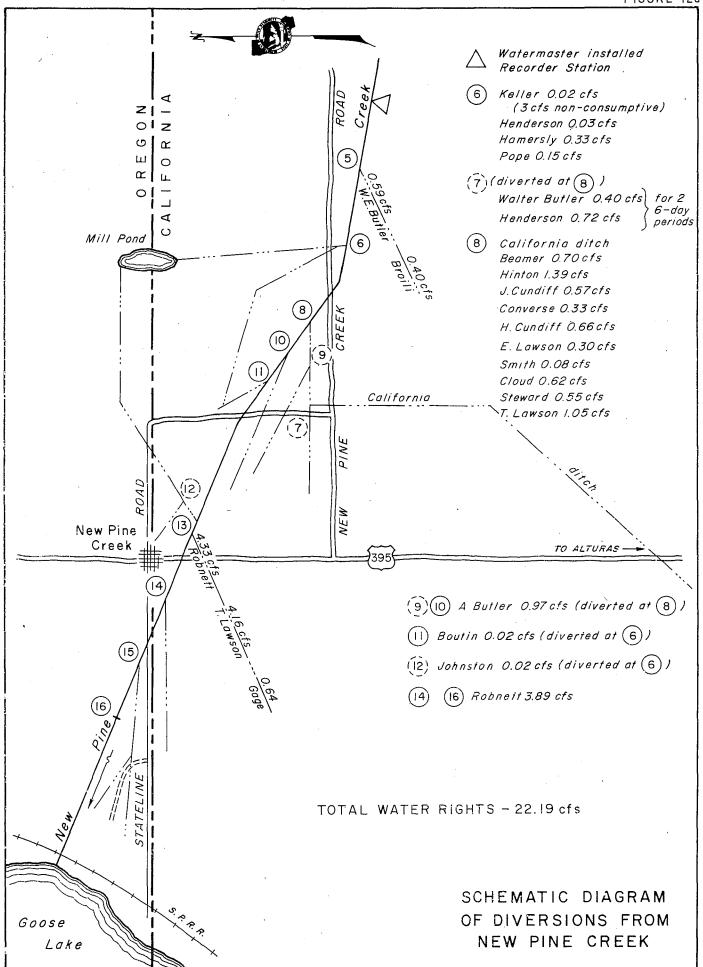
Shields Creek. A surplus water supply existed in Shields Creek until July 1. The flow decreased rapidly until approximately 75 percent of first priority allotments (four priorities) were served on September 1. The supply then gradually increased until the end of September when 60 percent of second priority allotments were being supplied.

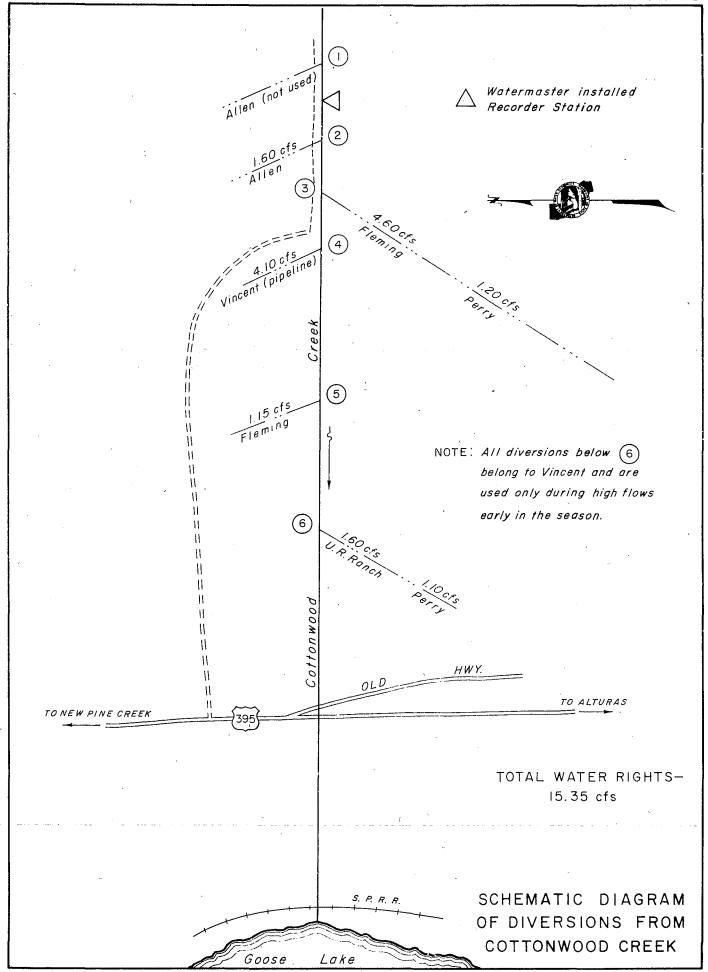
Parker Creek. The flow in Parker Creek peaked in mid-May. It then decreased steadily until July 14 when 100 percent of all allotments (four priorities) were served. From then until the end of July the flow continued to decrease gradually. Throughout the remainder of the season the flow remained constant at 15 percent of third priority allotments.

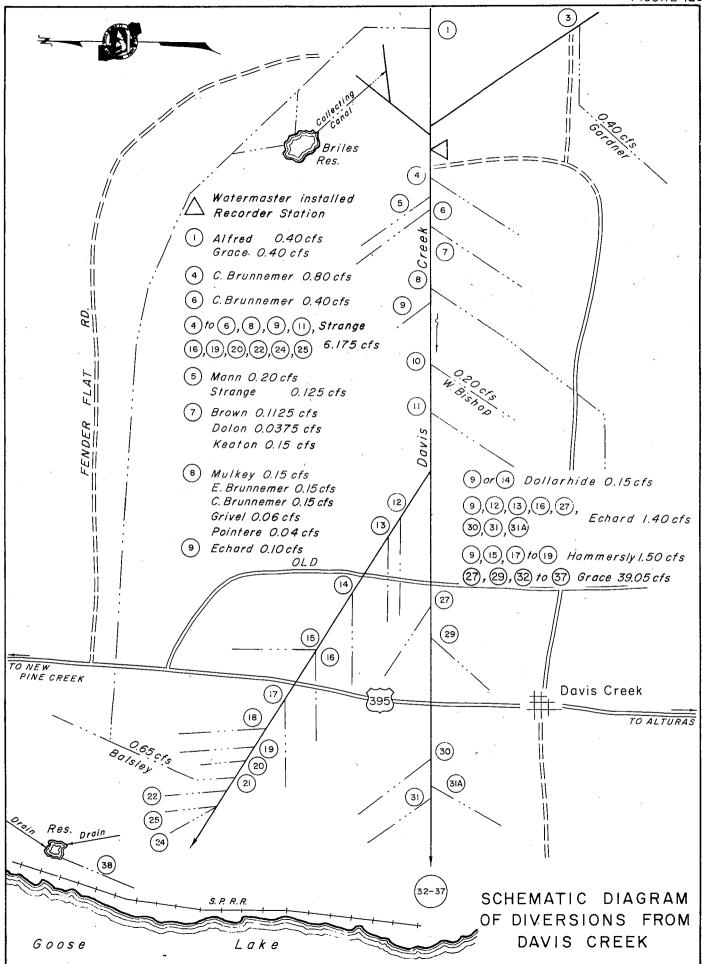
North Fork Pit River. A surplus water supply existed in the North Fork Pit River until June 24. On that date the Dorris Reservoir

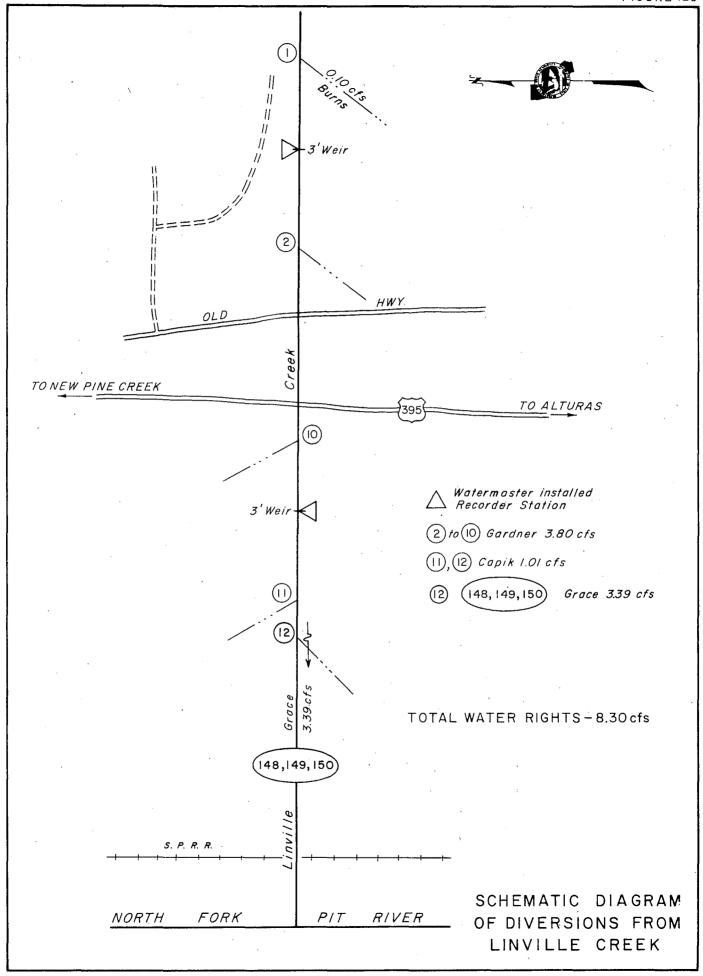
allotment was reduced. The flow then decreased rapidly until June 19 when only first priority allotments (five priorities) were being served. The decrease continued until July 19 when only stockwater was available. This condition continued throughout the remainder of the season.

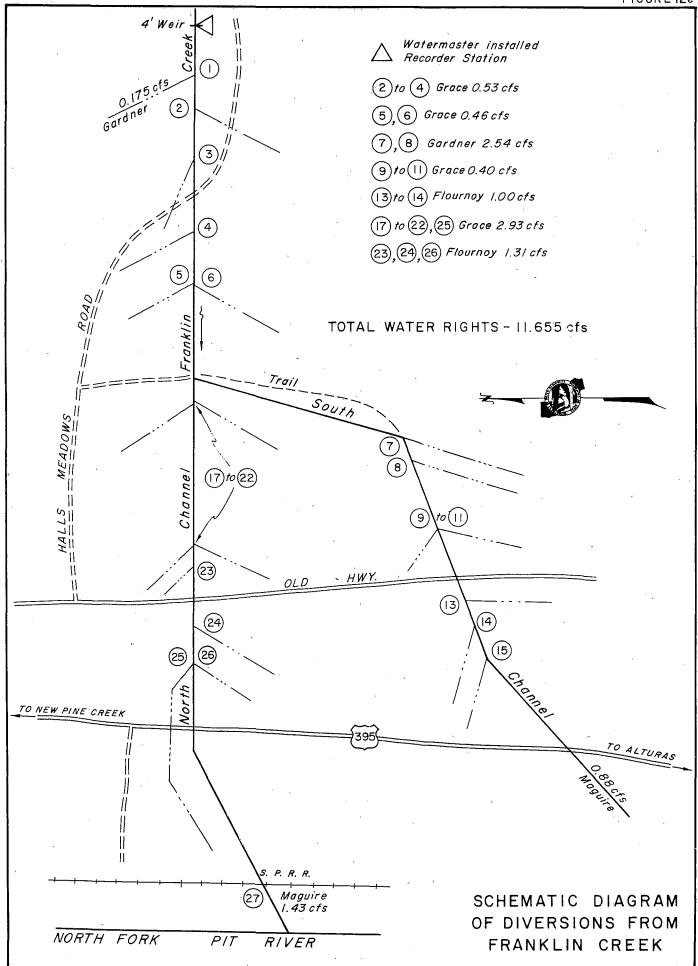


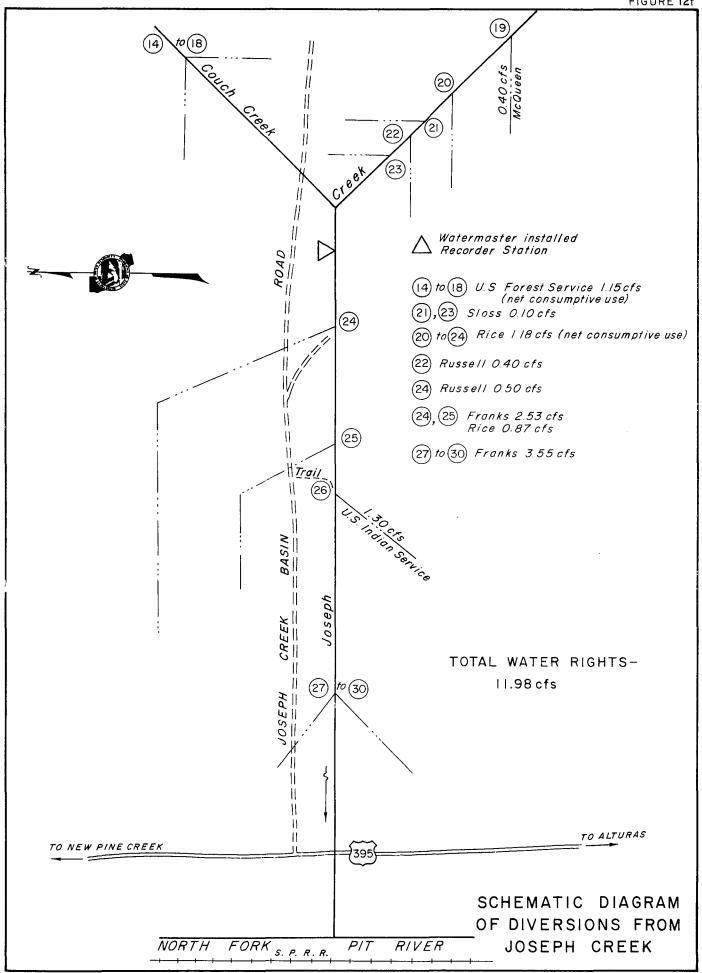


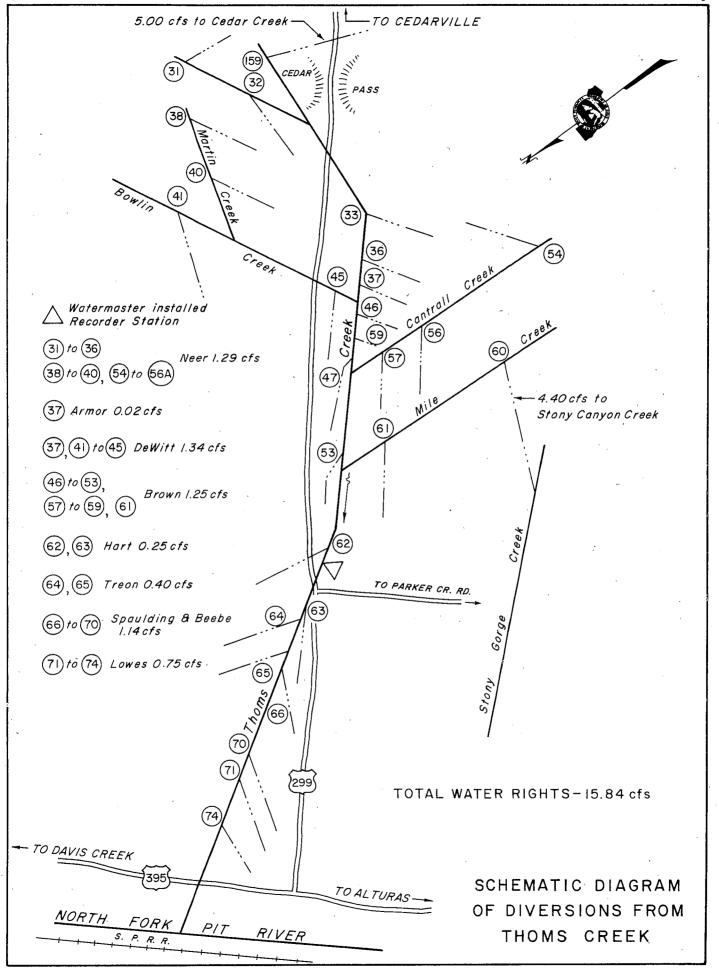


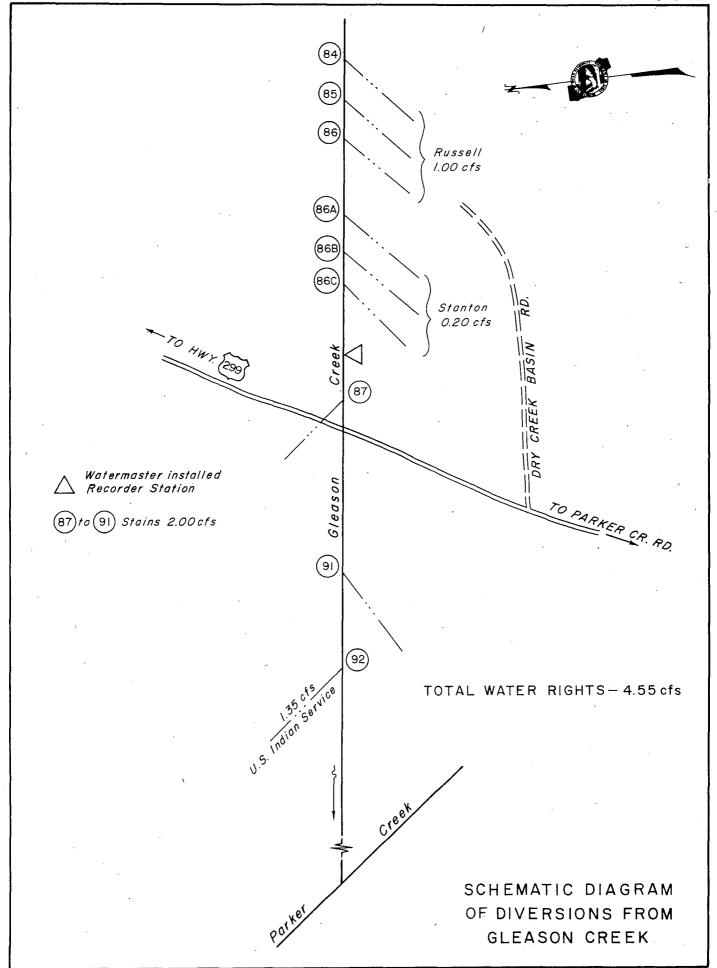


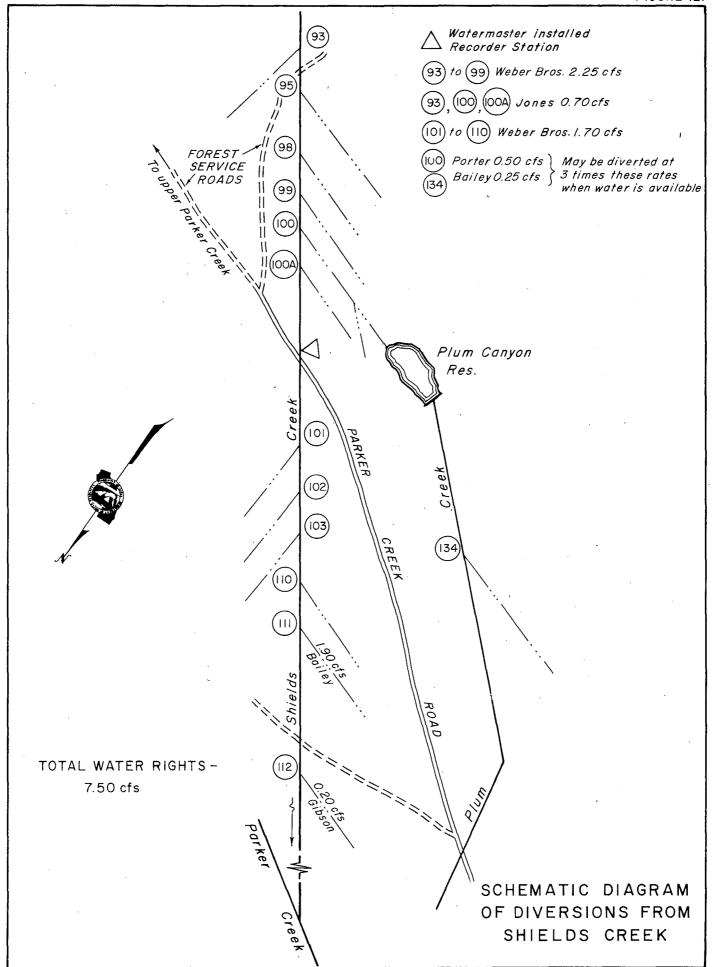












SCHEMATIC DIAGRAM

OF DIVERSIONS FROM

PARKER CREEK

(1<u>2</u>7)

to (131 A

Pearl Porter Res.

Jim Porter Res.

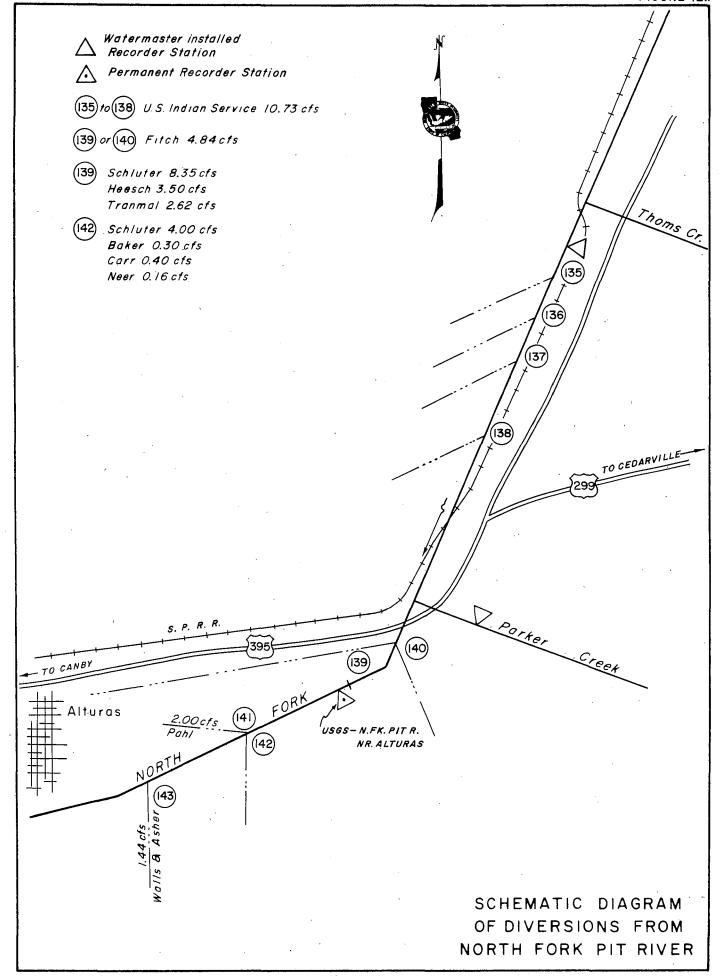


TABLE 21 DAILY MEAN DISCHARGE

NEW PINE CREEK BELOW SCHROEDER'S

Day	 March	_ : _	April	: May		June	: July	: August	:Septembe	r
1 2 3 4 5	,		* * * * * * * * * * * * * * * * * * *			83 77 77 77 77	41 41 40 49 38	17 16 16 15 15	5.5 5.3 5.3 5.3	
6 7 8 9 10				25 * 25 35		77 77 71 71 71	37 35 34 34 33	14 13 11 11	5.2 5.2 5.1 5.1	
11 12 13 14 15				41 41 39 39 41		71 71 71 69 69	31 29 28 28 27	9·3 9·3 9·3 7·0 7·0	5.1 5.0 4.9 4.9	
16 17 18 19 20	`			42 43 43 43		67 73 7 ⁴ 71 69	27 27 27 26 25	6.6 6.6 6.3	4.9 4.9 4.9 4.9	
21 22 23 24 25	,			83 60 71 89 100		65 60 59 57 54	25 24 23 22 22	6.1 6.1 6.0 6.0	4.9 4.9 4.9 4.8	
26 27 28 29 30 31				100 95 93 89 89		51 50 49 47 45	20 20 20 20 18 18	6.0 5.8 5.8 5.5 5.5	4.8 4.8 4.8**	
Mean	 	*	•	60.	7,	66.7	28.7	8.9	5.0	
Runoff acre-fe				2890		3970	1760	549	288	

^{*} Beginning of Record

^{**} End of Record

TABLE 22

DAILY MEAN DISCHARGE COTTONWOOD CREEK BELOW LARKIN GARDEN DITCH

Day	:_	March	: A	pril :	May:	June	July	: August	:September
1 2 3 4 5		. 12	The section is			e de esta e de e	10 10 9.7 9.6 9.2	3.7 3.6 3.3 3.4 3.3	0.3 0.3 0.3 0.3 0.3
6 7 8 9 10							8.8 8.6 8.6 8.4	3·3 3·3 3·3 3·2 3·1	0.3 0.3 0.3 0.3
11 12 13 14 15				* · · · · · · · · · · · · · · · · · · ·	÷		8.2 8.0 7.8 7.6 7.3	2.9 2.3 2.2 2.2	0.3 0.3 0.3 0.3 0.3
16 17 18 19 20						18 * 18	7.0 6.6 6.2 6.2 5.7	1.4 1.2 0.7 0.7 0.5	0.3 0.3 0.3 0.3
21 22 23 24 25		÷				18 17 16 15 15	5.7 5.5 5.5 5.4 5.2	0.5 0.4 0.3 0.3	0.3 0.3 0.3 0.3 0.3
26 27 28 29 30 31						14 14 14 13	5.2 4.9 5.0 5.2 4.5 3.8	0.3 0.3 0.3 0.3 0.3	0.3 0.4 0.4 0.4 0.4
Mean		, , , , , , , , , , , , , , , , , , , 		### ### ### ### ### 		15.3	7.0	1.7	0.3
Runoff acre-fe				## ## ## ## ## ## ## 1. 1. 2. 2. 1		365	432	105	19

Beginning of Record

TABLE 23
DAILY MEAN DISCHARGE

DAVIS CREEK AT OLD FISH WHEEL

March through September 1967

(In second-feet)

Day		March :	April :	May	: June	: July	: August	September
1 2 3 4 5	· · · · · · · · · · · · · · · · · · ·	- 2004 - 512 - *	• •	a sawy	55 51 46 39 33	18 17 15 15 14	6.5 6.5 7.2 7.2 7.5	5.2 4.8 4.8 4.5 4.5
6 7 8 9 10				45 * 55 63	46 49 46 4 6 43	14 14 15 15 14	7.5 7.2 6.5 6.5	4.5 T 4.3 3 4.2 4.0 5 3.7
11 12 13 14 15		4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		56 55 47 45 46	44, 46 42 40 42	14 14 12 12 12	6.0 6.0 6.0 5.8	3·7 3·7 3·7 4·0 4·0
16 17 18 19 20			entralia Service	56 66 77 81 80	43. 42 40 36 38	12 14 12 12 12	5.8 5.8 5.8 5.8	4.2 4.2 4.2 4.2 4.0
21 22 23 24 25				81 86 84 77 70	37 34 30 26 25	11 10 9.5 9.0 7.4	5.8 5.8 5.8 5.8	4.0 4.0 4.0 4.0 4.0
26 27 28 29 30 31			1	66 66 64 70 68 67	21 21 20 20 18	7.4 7.2 7.2 6.5 7.2 7.2	5.8 5.8 5.8 5.2 5.2	4.0 4.0 4.0 4.0 4.0
an			on a constant of the second	65.5		. 11.8.,	, _ 6.1,	4.0
noff :	et 🐇	Same and services		3120	2220	727	378	247

^{*} Beginning of Record

TABLE 24 DAILY MEAN DISCHARGE

LINVILLE CREEK AT OLD POWER HOUSE

Day :	March:	April:	May	June -	July	: August	:September
1 2 3 4 5				3.0 2.9 2.7 2.7 2.8	2.1 2.1 2.1 2.0 2.0	1.9 1.9 1.9 1.9	2.0 2.0 2.1 2.1 2.1
6 7 8 9 10			3.4 * 3.4	2.8 2.7 2.7 2.6	2.0 2.0 2.0 2.0 2.0	2.1 2.1 2.1 2.1 2.1	2.1 2.1 2.2 2.2 2.2
11 12 13 14 15			3.1 3.0 3.0 3.0	2.6 2.5 2.5 2.4 2.3	2.0 2.0 2.0 2.0 2.0	2.0 2.0 2.0 2.0	2.2 2.3 2.3 2.3
16 17 18 19 20			3·1 3·7 4·0 3·9 3·9	2.3 2.3 2.2 2.2	2.0 2.0 2.0 2.0 2.0	2.0 2.0 2.0 2.0	2.3 2.3 2.3 2.3 2.3
21 22 23 24 25			4.0 4.1 4.0 3.8	2.2 2.2 2.2 2.2 2.2	2.0 2.0 2.0 2.0 2.0	1.8 2.0 2.1 2.1 2.1	2.3 2.3 2.3 2.3
26 27 28 29 30 31		·	3.7 3.5 3.5 3.4 3.2 3.1	2.2 2.1 2.1 2.1 2.1	1.7 1.6 1.8 1.9 1.9	2.1 2.1 2.0 2.0 2.0	2.3 2.3 2.3 2.3 2.3
Mean		######################################	3.5	2.4	2.0	2.0	2.2
Runoff in acre-feet		een een een ein een een een een een een	161	1 ⁴ 5	121	124	133

^{*} Beginning of Record

TABLE 25 DAILY MEAN DISCHARGE

FRANKLIN CREEK ABOVE DIVERSIONS

March through September 1967

(In second-feet)

Day :	March:	April :	May	: June	: July :	August	:September
1 2 3 4 5			1	13 8.5 7.1 6.8 7.7	2.9 2.6 2.6 2.6 2.8	2.0 2.0 2.0 2.0	1.8 1.8 1.8 1.8
6 7 8 9 10			36 * 42 37	1 2 12 12 11 9.0	2.5 2.4 2.4 2.3	2.0 2.0 1.9 1.9	1.8 1.8 1.8 1.8
11 12 13 14 15			34 28 29 31 36	7·7 7·7 7·0 6·5 6·0	2.3 2.3 2.2 2.1 2.1	1.9 1.9 1.9 1.9	1.7 1.7 1.7 1.7
16 17 18 19 20			40 40 32 31 29	5.6 5.2 5.0 4.6	2.2 2.2 2.2 2.1 2.1	1.9 1.9 1.9 1.9	1.7 1.7 1.7 1.7
21 22 23 24 25		1 1 2 2 2	31 32 33 32 28	4.6 4.5 4.4 4.0 3.8	2.1 2.1 2.1 2.1 2.1	1.9 1.9 1.9 1.9	1.6 1.6 1.6 1.6
26 27 28 29 30 31	y 17 we do de de de		27 24 23 21 17 15	3.7 3.3 3.2 3.2 3.1	2.1 2.1 2.1 2.1 2.1 2.0	1.9 1.8 1.8 1.8 1.8	1.6 1.6 1.6 1.6
Mean			30.3	6.6	2.3	1.9	1.7
Runoff in acre-feet	The same is some from a	and the second s	L440	392 ************************************	140	117	1012 ⁶ 77 6

Beginning of Record

TABLE 26 DAILY MEAN DISCHARGE

JOSEPH CREEK BELOW COUCH CREEK

Day:	March	April	: May	: June	:_July	: August	:September
1 2 3 4 5				42 36 30 24 24	9.1 9.1 9.1 9.1 9.1	1.7 1.7 1.7 1.7	1.3 1.3 1.3 1.3
6 7 8 9 10			53 * 42	30 30 18 18 18	9.1 7.1 6.1 4.2 4.2	1.7 1.6 1.5 1.4 1.4	1.3 1.3 1.3 1.3
11 12 13 14 15			36 24 30 42 48	18 18 18 18	4.2 4.2 4.2 3.0 3.0	1.4 1.3 1.3 1.3	1.3 1.3 1.3 1.3
16 17 18 19 20			59 65 71 65 59	18 18 18 18 18	3.0 3.0 3.0 3.0 3.0	1.3 1.3 1.3 1.3	1.3 1.3 1.3 1.3
21 22 23 24 25			59 59 59 59 59	13 13 13 10 10	3.0 3.0 1.7 1.7	1.3 1.2 1.2 1.2	1.3 1.3 1.3 1.3
26 27 28 29 30 31	·		53 42 42 42 36 36	10 10 10 10 10	1.7 1.6 1.7 1.7 1.7	1.3 1.3 1.3 1.3 1.3	1.2 1.2 1.2 1.2 1.2
Mean			49.6	18.6	4.2	1.4	1.3
Runoff in acre-feet			2260	1110	258	85	76

^{*} Beginning of Record

TABLE 27 DAILY MEAN DISCHARGE^{* 3}

NORTH FORK PIT RIVER BELOW THOMS CREEK

Day	March:	April :	May_:	June :	July	: August	:September
1 2 3 4 5			10 ft	137 135 121 110 109	21 20 18 14 10	1.5 1.5 4.4 4.4 4.4	4.1 4.1 4.2 4.3 4.2
6 7 8 9 10	7-		172 * 190 190	132 126 112 109 101	7.5 7.6 8.0 4.7 4.5	4.3 4.3 4.5 4.5 4.5	4.1 4.1 4.1 4.1 4.1
11 12 13 14 15			178 195 183 178 172	98 91 88 85 83	6.0 4.5 4.0 3.3 3.2	4.5 4.5 4.4 4.4 4.4	3.0 1.5 1.5 1.5
16 17 18 19 20			178 194 212 207 195	80 7 ⁴ 72 63 5 ⁴	1.9 4.5 3.2 2.5 2.2	4·3 4·3 4·3 4·3 4·2	1.4 1.4 1.4 1.4 1.4
21 22 23 24 25		1	195 190 190 178 166	50 48 45 40 35	2.1 1.5 1.4 1.5 1.6	4.2 4.2 4.2 4.2 4.2	1.4 1.3 1.3 1.3
26 27 28 29 30 31			156 147 139 132 126 132	3 ¹ 4 26 26 22 21	1.5 1.5 1.5 1.5 1.4 1.5	4·3 4·3 4·2 4·1 4·1 4·1	1.3 1.3 1.3 1.3
Mean			. 175	77.6	5.4	4.1	2.4
Runoff in acre-feet			8320	4620	332	254	140

^{*} Beginning of Record

In was in the first to

TABLE 28 DAILY MEAN DISCHARGE 48

THOMS CREEK AT CEDARVILLE-ALTURAS HIGHWAY

Day	: March	: April :	May	: June	: July	August	September
1 2 3 4 5		e de suit e justi suurie. T	San Alega (Alega	66 79 77 73 96	4.2 4.2 3.8 3.2 2.9	0.9 0.8 0.8 0.8 0.7	0.3 0.4 0.4 0.4 0.4
6 7 8 9 10			e	96 79 66 51 39	2.8 2.6 2.4 2.3 2.2	0.8 0.6 0.6 0.6	0.4 0.4 0.4 0.4 0.4
11 12 13 14 15			• •	31 27 24 21 18	2.0 1.9 1.8 1.6	0.5 0.5 0.4 0.4 0.4	0.4 dd 0.4 dd 0.4 dd 0.4 df 0.4 df
16 17 18 19 20		i e	110* 103 103 107 103	15 14 12 11 10	1.8 1.8 1.1 1.1	0.3 0.3 0.3 0.3	0.4 0.5 0.5 0.5 0.4
21 22 23 24 25			103 107 107 105 79	10 9.0 7.9 7.0 6.5	1.0 0.8 0.6 1.0 0.9	0.3 0.3 0.3 0.3	0.4 0.4 0.4 0.4 0.4
26 27 28 29 30 31		* :	73 70 46 40 40 41	6.4 6.0 5.5 5.0 4.7	0.9 0.9 0.9 0.9 0.8 0.9	0.3 0.3 0.3 0.2 0.4 0.2	0.4 0.4 0.4 0.4
Mean			83.6	32.4	1.8	0.5	0.4
Runoff ir			2650	1930	111	28	2)

^{*} Beginning of Record

TABLE 29
DAILY MEAN DISCHARGE

PARKER CREEK AT FOGARTY RANCH

***		i de la companya de l					. Name of the contract of the	A HARRING TO THE STATE OF THE S	enga aluman en la care care care en
Day	:_	March	_:_	April	: May	J une	July	August	:September
1 2 3 4 5					35 * 35 44 61	78 85 85 95 118	15 15 15 14 14	2.7 2.0 1.4 1.1	1.1 1.1 1.1 1.1
6 7 8 9					79 123 151 176 141	118 101 92 86 80	1 ¹ 4 13 13 13 12	1.1 1.1 1.1 1.1	1.1 1.1 1.1 1.2 1.2
11 12 13 14 15			•		115 104 105 123 147	70 64 55 52 47	12 11 11 11 10	1.1 1.1 1.1 1.1	1.2 1.2 1.3 1.3
16 17 18 19 20				* * * * * * * * * * * * * * * * * * * *	164 176 177 172 157	44 41 38 34 30	10 9•3 9•0 8•7 8•1	1.1 1.1 1.1 1.1	1.3 1.3 1.4 1.3
21 22 23 24 25					157 155 141 129 100	27 26 24 22. 21	8.0 7.8 7.3 7.0 6.7	1.1 1.1 1.1 1.1	1.3 1.2 1.2 1.2 1.2
26 27 28 29 30 31			4 79	e e e e e e e e e e e e e e e e e e e	101 92 86 84 72 73	19 18 17 16 14	7.9 8.5 7.2 6.0 4.9	7 _ 7	1.1 1.1 1.2 1.2
Mean					115.8	53 · 9	10.1	1.2	1.2
Runoff	in					3210			71

^{*} Beginning of Record

TABLE 30 DAILY MEAN DISCHARGE

SHIELDS CREEK BELOW PEPPERDINE RANCH

Day	;_	March	: April	: May		: July	: August	:September
1 2 3 4 5		· week	unio Transcere	6.5* 6.5 6.5 7.4	8.1 8.6 8.1 8.1 8.6	3.7 3.7 2.9 2.9	1.4 1.3 1.3 1.3	0.3 0.4 0.6 0.7 0.7
6 7 8 9 10		·		8.1 9.4 10 10 9.4	9.0 8.6 8.1 8.1	2.9 2.9 2.9 2.9	1.4 1.3 1.3 1.2	0.7 0.8 0.8 0.6 0.6
11 12 13 14 15		,		9.2 9.0 8.6 8.6 9.0	7.4 7.4 7.4 7.4 7.4 7.4	2.9 2.9 2.9 2.9	1.2 1.1 1.0 0.9 0.9	0.7 0.9 0.8 0.8
16 17 18 19 20				9.8 10 10 9.8 9.8	7.4 7.4 6.5 6.5	1.9 1.4 1.2 1.2	0.9 1.0 1.1 1.3 1.0	1.1 2.9 2.9 2.7 2.7
21 22 23 24 25				9.8 10 9.4 9.2 8.6	5.6 5.6 6.5 5.6	1.4 1.3 0.5 0.6 1.1	0.8 0.8 0.9 1.2	2.5 2.5 2.5 2.5 2.5
26 27 28 29 30 31				8.1 7.4 8.1 8.1 7.4	5.6 5.6 5.6 4.6 4.6	1.0 1.0 1.1 1.2 1.2	1.5 1.8 1.4 1.2 0.8 0.4	2.5 2.5 2.4 2.4 2.4
lean "				8.7	7.0	2.1	1.1	1.6
Runoff acre-fe		***************************************	- 100 cm	503	416	127	70	941.

^{*} Beginning of Record

TABLE 31 DAILY MEAN DISCHARGE

PARKER CREEK ABOVE HIGHWAY 395 NEAR ALTURAS

Day	 March:	April :	May	: June :	July	: August	:September
1 2 3 4 5				47 44 40 39 44	11 8.1 4.6 5.9 6.0	3.0 2.8 2.6 2.3 2.1	0.8 0.7 0.7 0.7
6 7 8 9 10				59 48 43 41 38	6.1 5.2 6.3 5.7 5.5	2.0 2.0 2.0 2.0	0.5 0.3 0.3 0.2 0.2
11 12 13 14 15				35 33 30 23	5.4 4.4 4.5 5.1 5.5	2.0 1.9 1.7 1.3	0.2 0.2 0.2 0.2 0.2
16 17 18 19 20			80 * 83 79 67	9.0 8.5 7.0 6.6 9.0	5.6 5.5 3.9 3.2 3.0	1.1 1.1 1.1 1.1	0.2 0.2 0.3 0.4 0.5
21 22 23 24 25			66 68 62 51 47	11 11 12 11 8.7	2.8 3.0 3.0 3.0	1.0 1.0 1.0 1.0	0.6 0.7 0.8 0.8 0.9
26 27 28 29 30 31			38 36 35 37 35 41	7.0 7.0 8.9 13	2.8 3.0 3.0 3.0 3.0	0.9 0.9 0.9 0.9 0.9	0.9 0.9 0.9 1.0
Mean			55.0	.23 • 9	4.6	1.5	.0.5
Runoff acre-f	gr. t.		1640	1420	284	. 92	32

^{*} Beginning of Record

TABLE 32 DAILY MEAN DISCHARGE NORTH FORK PIT RIVER NEAR ALTURAS

Day:	March :	April	: May	June	:July:	August	:September
1 2 3 4 5	3 ⁴ 32 27 23 23	38 38 38 33 40	108 104 95 90	235 208 164 138 157	22 28 6.6 7.8 29	0.4 0.2 0.3 2.4 2.4	0.9 0.8 0.6 0.6 0.8
6 7 8 9 10	25 28 28 32 32	50 72 133 86 72	106 190 300 410 3 ⁴ 7	232 195 164 153 138	2.1 0.6 0.6 0.5 0.3	1.2 0.9 0.8 0.6 0.6	0.8 0.8 0.8 0.6 0.6
11 12 13 14 15	29 33 32 33 27	67 60 57 67 111	280 262 218 225 275	122 115 104 80 48	0.3 0.3 0.2 0.2	0.6 0.6 0.6 0.5 0.5	0.6 0.6 0.8 0.9 1.2
16 17 18 19 20	144 121 90 81 64	101 74 74 79 76	344 389 417 404 353	41 38 15 20 25	0.2 0.2 0.2 0.2 0.2	0.4 0.4 0.2 0.2 0.2	1.8 1.0 1.0 0.9
21 22 23 24 25	57 57 55 52 50	65 69 84 83 125	341 353 220 260 232	23 24 41 30 15	0.2 0.2 0.2 0.3 0.2	0.2 0.2 0.3 0.4 0.5	0.8 0.8 0.6 0.8 0.8
26 27 28 29 30 31	47 40 38 36 42 39	133 147 252 200 125	190 159 155 157 140 183	17 15 15 29 37	0.3 6.1 17 20 2.7 0.4	0.5 0.5 0.9 1.2 1.0	0.8 0.8 0.8 0.3
Mean	46.8	88.3	239	87.9	4.8	0.7	0.8
Runoff in acre-feet	2880	5250	14670	5230	292	41	47.

Shackleford Creek Watermaster Service Area

The arguest to tree ton!

The Shackleford Creek service area is located in western Siskiyou County near the town of Fort Jones in Scott Valley. There are 21 water right owners in the service area with total allotments of 63.98 cubic feet per second. The major sources of water supply for this service area are Shackleford Creek, which flows through the central part of Quartz Valley, and its tributary, Mill Creek, which rises east of the headwaters of Shackleford Creek. Evans Creek, a small tributary to Mill Creek, enters from the south.

The service area encompasses the Quartz Valley region of Scott Valley and includes the entire agricultural area within the Shackleford Creek Basin. It is about two miles wide by six miles long with the main axis and drainage running from south to north. Elevations on the agricultural area range from about 3,100 feet at the south to about 2,650 feet at the confluence of Shackleford Creek and Scott River.

A schematic drawing of the Shackleford Creek stream system is presented as Figures 13 and 13a, pages 147 and 149.

Water Supply

The water supply for Shackleford Creek is derived from snow-melt runoff, springs and seepage, and supplemental stored water released from Cliff Lake and Campbell Lake. These lakes are located near the headwaters of Shackleford Creek.

The watershed of the Shackleford Creek stream system contains about 31 square miles, located in the heavily forested, steep, mountainous terrain of the northeasterly slopes of the Salmon Mountains. It varies in elevation from about 7,000 feet along its west rim to about 3,000 feet at the foot of the slopes bordering Quartz Valley.

Snowmelt runoff is normally sufficient to supply all demands until the middle of July. The supply then usually decreases until the

first part of August when water is released from Cliff and Campbell Lakes to maintain sufficient flow for second priority allotments in the Shackleford Ditch.

There were no stream gaging stations operated in the Shackleford Creek service area during 1967. However, several stations were maintained in various diversion ditches.

Method of Distribution

Irrigation is accomplished primarily by wild flooding of permanent pasture and alfalfa fields. Water is distributed by ditches and laterals to the places of use. Shackleford Ditch, the largest of these ditches, has a length of about six miles and a capacity of about 12 cubic feet per second.

The Shackleford Creek decree (see Table 1) provides four separate areas of distribution within the service area and establishes the following number of priority classes for these areas: Upper Shackleford Creek - seven; Lower Shackleford Creek - seven; Upper Mill Creek - three; and Lower Mill Creek - two.

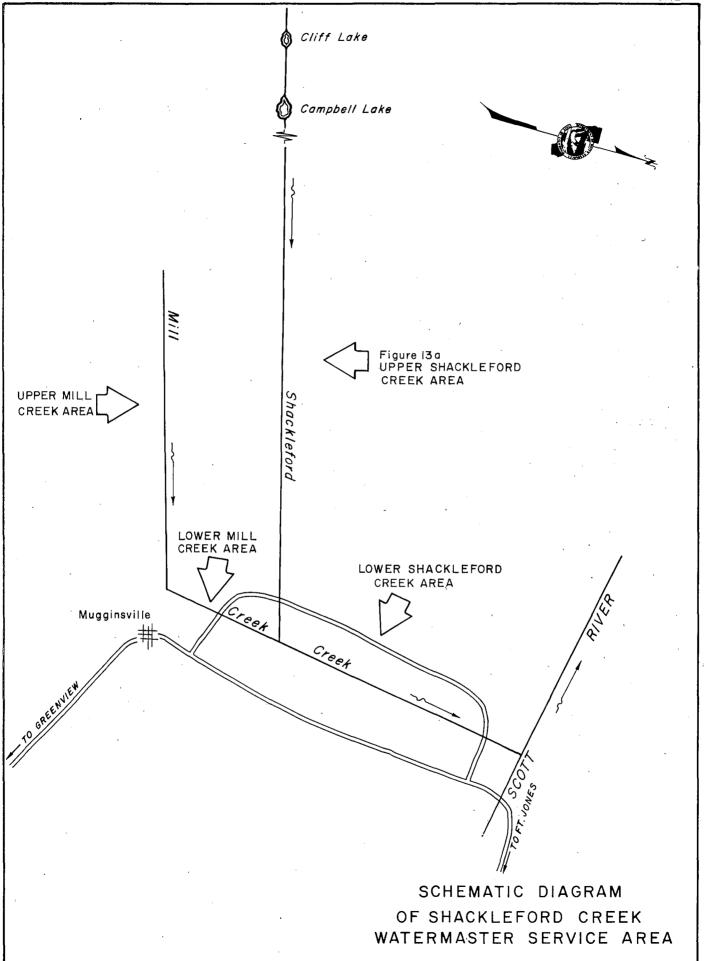
1967 Distribution

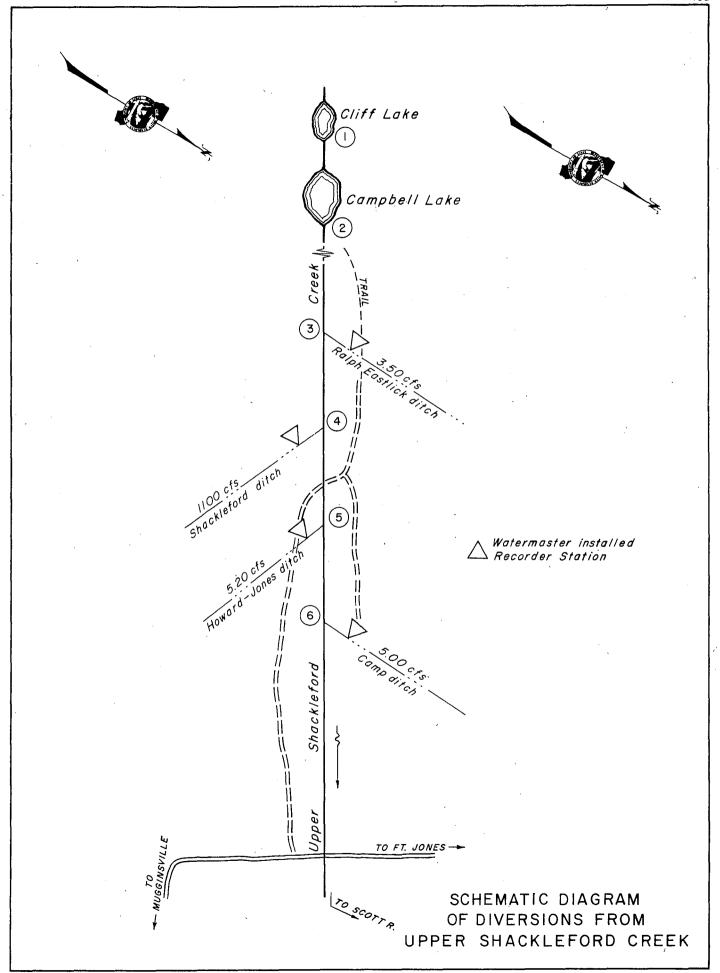
Watermaster service began June 1 in the Shackleford Creek service area and continued until September 30. Harold B. German, Water Resources Engineering Associate, was watermaster during this period.

The available water supply was above normal early in the season but only about normal after August 1. Water right owners in the Howard-Jones Ditch did not use any of their water during the 1967 season. Their fourth priority allotments (seven priorities in the service area) were therefore available for use by owners of lower priorities.

Special Occurrences

New weirs were installed in the upper three diversions this season, and the weir and recorder station on the Ralph Eastlick Ditch was moved upstream. Logging activities above the former station caused it to fill with sand and gravel, thus necessitating the new location.





Shasta River Watermaster Service Area

The Shasta River service area is located in the central part of Siskiyou County, south and east of the town of Yreka. There are 108 water right owners in the service area with total allotments of 594.612 cubic feet per second.

The source of water supply is Shasta River and its several tributaries. The upper reaches of the service area are served by two groups of tributaries. One group, comprising Boles, Beaughan, Carrick, and Jackson Creeks, rises on the northwestern slopes of Mount Shasta. The other group, consisting of Dale and Eddy Creeks, and Shasta River west of U. S. Highway 99, rises on the eastern slopes of the Trinity Mountains. All these streams join the main stem of the Shasta River above Dwinnell Reservoir near the town of Weed. As the Shasta River flows northward from Dwinnell Reservoir to its confluence with the Klamath River, north of Yreka, it is joined by three major tributaries. Parks Creek, rising on the eastern slopes of the Trinity Mountains, enters from the west near the town of Gazelle. Big Springs Creek, from Big Springs Lake, enters from the east about a mile below Parks Creek. Little Shasta River, rising on the western slopes of the mountainous area between Butte Valley and Shasta Valley, enters from the east near the town of Montague.

The place of use is in Shasta Valley which is approximately 30 miles long and 30 miles wide. The valley has numerous small, coneshaped, volcanic hillocks scattered throughout its central portion that produce the effect of dividing the area into a number of distinctively separate parts. Because of these formations only about 141,000 acres of the approximately 507,000 acres within the valley are irrigable. The valley floor elevation averages approximately 3,000 feet.

A schematic drawing of each major stream system within the Shasta River service area is presented as Figures 14 through 14i, pages 157 through 175.

Water Supply

The water supply for Shasta Valley is derived from snowmelt runoff, springs and underground flow, and occasional summer thunder showers. In several portions of the stream system the spring and underground flow is adequate to supply most allotments throughout the season. Much of the underground flow is derived from the northern slopes of Mount Shasta, which rises to an elevation of 14,162 feet at the south end of Shasta Valley. Although the snowpack on Mount Shasta is usually heavy, there is negligible surface runoff.

Parks Creek, Upper Shasta River, and Little Shasta River derive a major portion of their water supply from snowmelt runoff. This flow is usually adequate to supply all allotments until the middle of May.

Beaughan Creek, Carrick Creek, Shasta River from Boles Creek to Dwinnell Reservoir, Big Springs, and Lower Shasta River have enough runoff from springs to supply a large percentage of the allotments throughout the season.

Records of the daily mean discharge at several stream gaging stations in the Shasta River service area are presented in Tables 33 through 39, pages 177 through 183.

Methods of Distribution

Irrigation of permanent pasture and alfalfa lands is accomplished principally by wild flooding. Much of the return water is recaptured and used on lower pasture lands. Sprinkling systems are used for irrigating some alfalfa and grain lands.

Water is diverted primarily by diversion dams and then conveyed by ditch or canal to the place of use. The largest and longest canal in the area is the Edson-Foulke Yreka Ditch, which has a capacity of about 60 cubic feet per second and a length of about 15 miles. Water is also supplied into ditch systems by pumped diversions. The largest of these belong to three irrigation districts. Several riparian water right owners also use pump diversions.

Many privately owned storage reservoirs exist in the area. Water storage from these reservoirs is used to supplement continuous flow allotments.

The Shasta River decree (see Table 1) provides eight separate areas of distribution within the service area. This decree established the following number of priority classes for these areas: Shasta River above the confluence with Big Springs Creek - 43; Boles Creek - 20; Beaugham Creek - 5; Carrick Creek - 13; Jackson Creek - 7; Parks Creek - 25; Shasta River below the confluence with Big Springs Creek - 29; and Little Shasta River - 7.

Three privately operated water districts within the service area have main diversions which are under supervision of the watermaster. These are: Shasta River Water Users Association, Grenada Irrigation District, and Big Springs Irrigation District. A fourth, the Montague Water Conservation District, stores water in Dwinnell Reservoir for use by the District and by natural flow water right owners immediately below the dam. The watermaster is responsible for diversion to these users.

A number of riparian water users along the Lower Shasta River were not included in the Shasta River decree. Owners of these undefined water rights are therefore not subject to watermaster supervision; consequently, in seasons of short supply these rights can be the cause of many water distribution problems.

1967 Distribution

Watermaster service began April 2 in the Shasta River service area and continued through September 30. Harold B. German, Water Resources Engineering Associate, was watermaster during this period.

The available water supply in the service area was generally above average during the season.

Parks Creek. The flow in Parks Creek was sufficient to supply all allotments (25 priorities) until early July. Some water continued to be diverted into the Yreka Ditch until August 20. The first priority allotments of six cubic feet per second were available for the entire season. Water users downstream from the lowest first priority diversion

received a portion of their allotments during the latter part of the season from return flow and from water rising in the gravel streambed.

Upper Shasta River. The water supply in this area (including Dale and Eddy Creeks), which depends almost entirely on snowmelt runoff, was above average for the season. However, an unusually warm summer caused the minimum runoff occurring in September of 1967 to be less than it was in 1966, a dry season.

During early spring, enough water was available to satisfy all allotments (eight priorities). As the flow decreased, the following levels of priority allotments were met: July 18 - all of fourth priority; July 23 - all of the third priority (Yreka Ditch main allotment); and September 4 (the seasonal low) - 16 percent of the third priority.

Shasta River from Boles Creek to Dwinnell Reservoir. Boles Creek and Shasta River from Boles Creek to Dwinnell Reservoir were operated as one stream, under a long standing oral agreement among the water right owners, with water being distributed on an equal and correlative basis. Adequate water was available to satisfy all allotments until the middle of August. All diversion were then cut to 80 percent. Early in September the flow increased to again allow diversion of 100 percent.

Beaughan Creek. The flow of Beaughan Creek was sufficient to satisfy most demands (five priorities) for the entire season. The creek is routed through a mill pond owned by the International Paper Company which uses approximately 35 percent of the flow for industrial purposes.

<u>Carrick Creek.</u> The water supply in Carrick Creek was adequate to satisfy all allotments (13 priorities) during the entire irrigation season.

Little Shasta River. Enough water was available in the Little Shasta River to satisfy all fifth priority allotments (seven priorities) until early in July. After that date close regulation became necessary to adequately distribute this priority. The flow continued to decrease to approximately 20 percent of fifth priority allotments by the first week in August. It then stayed constant for the remainder of the season.

The daily mean discharge of Little Shasta River near Montague

is presented in Table 38, page 182. This runoff is augmented by rising water along the river channel, and by substantial inflow from Cleland Springs, a tributary approximately two miles below the stream gaging station. Therefore, considerably more water is usually available for distribution at downstream diversion points than is indicated in the discharge table.

<u>Dwinnell Reservoir</u>. Releases from Dwinnell Reservoir to the Montague Water Conservation District commenced on April 26 and continued into October. Reservoir operation data for the 1967 season are shown in Tables 35 and 36, pages 179 and 180.

By agreement with the Montague Water Conservation District water users on Shasta River below Dwinnell Reservoir received stored water from the reservoir on demand in lieu of their natural flow rights. The agreement allotment totals and the amount delivered to each user this season are shown in the following tabulation:

DELIVERIES TO NATURAL FLOW WATER RIGHT OWNERS BELOW DWINNELL RESERVOIR - 1967

Name of Water Right Owner	Allotment in Acre-feet		Delivered From ell Reservoir : % of Allotment
Flying L. Ranch	198	198	100
Frank Ayers	464	464	100
J. N. Taylor	1,200	1,073	89
W. W. Valentine Hole-in-the-Ground Rand Seldom Seen Ranch TOTALS	596 924 3,382	0 702 2,437	0 <u>76</u> 72

Big Springs. Due to the late, cold spring, the flow of Big Springs was below normal. This shortage of water and a misunderstanding about the maximum allowable surface elevation of Big Springs Lake, caused some operational problems early in the season.

During July, August, and September the flow in Big Springs increases as snowmelt from higher elevations on Mount Shasta percolates into the ground and reappears as surface flow at Big Springs Lake. As a result, Big Springs Irrigation District, a third priority water right owner, was able to pump its full allotment during August and September.

Lower Shasta River. The water supply in Lower Shasta River was sufficient to satisfy all allotments (29 priorities) for the entire season. During the first week in August the flow reached its low for the season at just over 100 percent of allotments. It then increased, providing surplus water for the remainder of the season.

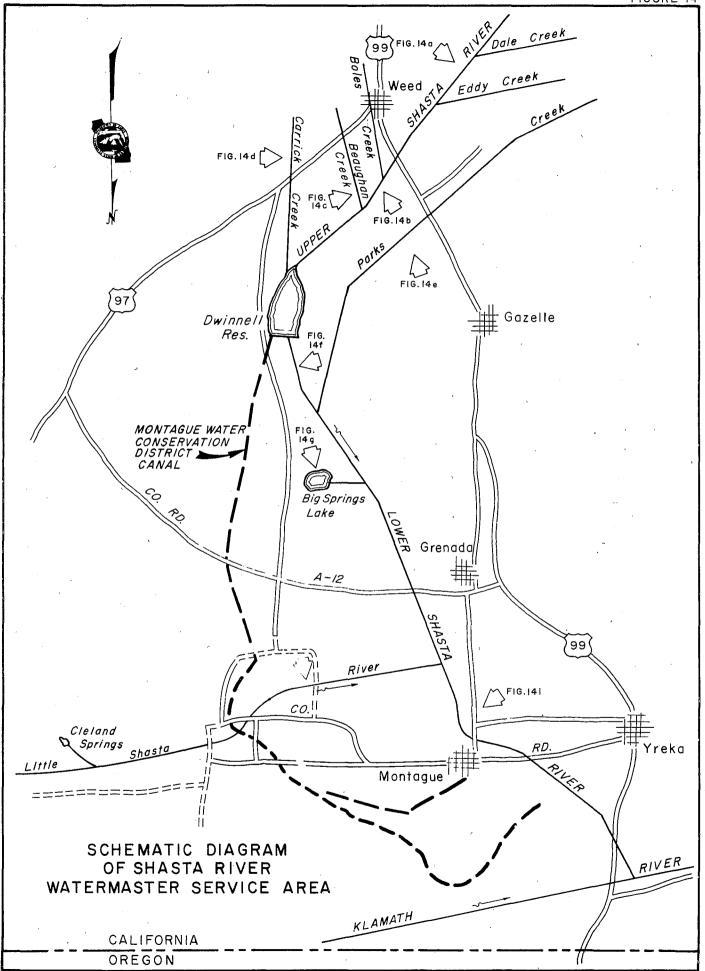
and the second of the first of a property and the high law of

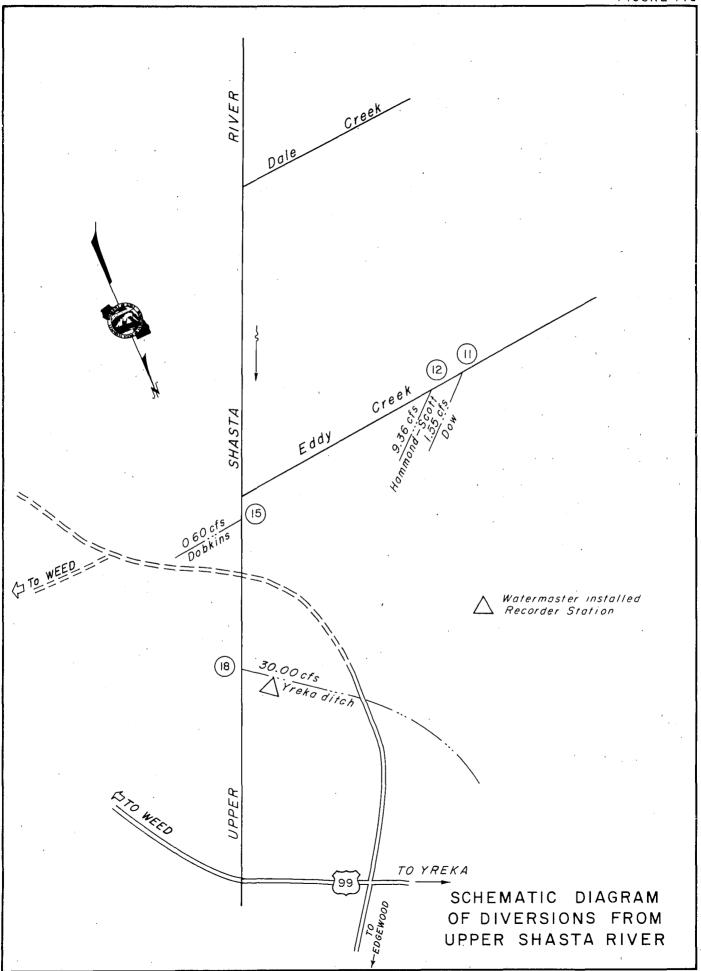
Special Occurrences

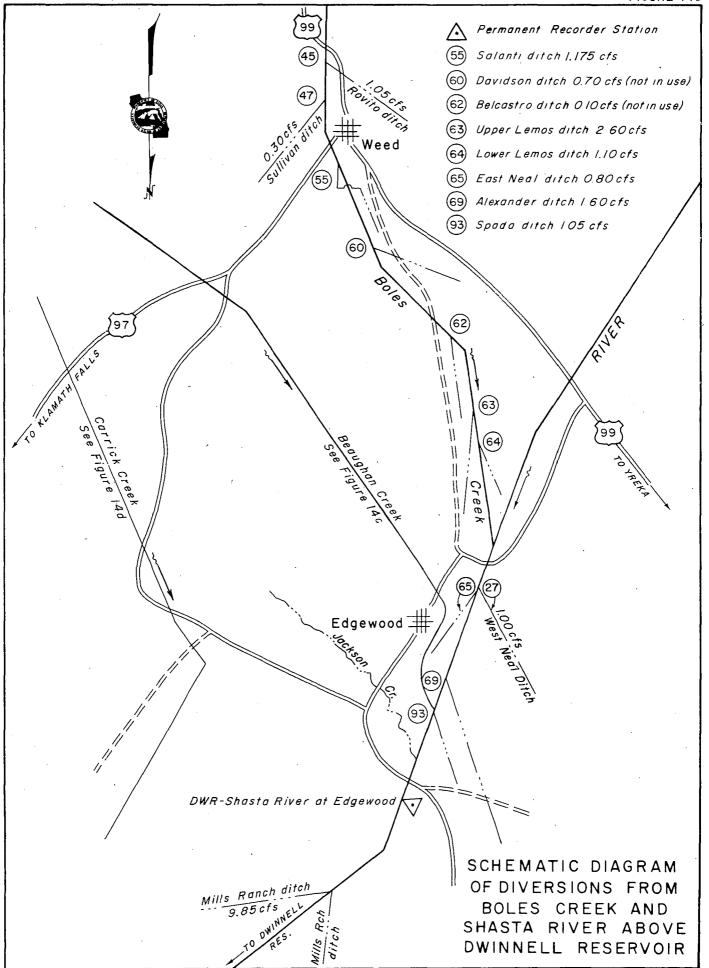
Three water control devices were constructed in the Shasta River service area during the season.

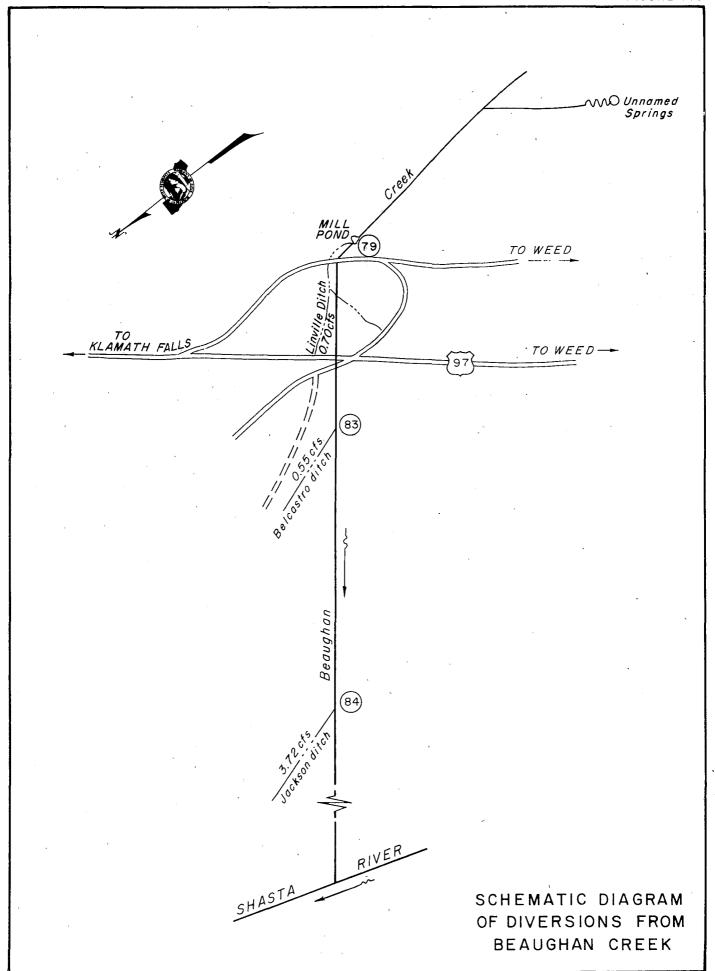
A concrete headwall with a metal screw-type headgate was built in the Dimmick Ditch near its point of diversion from Little Shasta River. A concrete structure, providing a continuous automatic division of water rights, was built in the Hart, Haight, and Prather Ditch which also diverts from Little Shasta River.

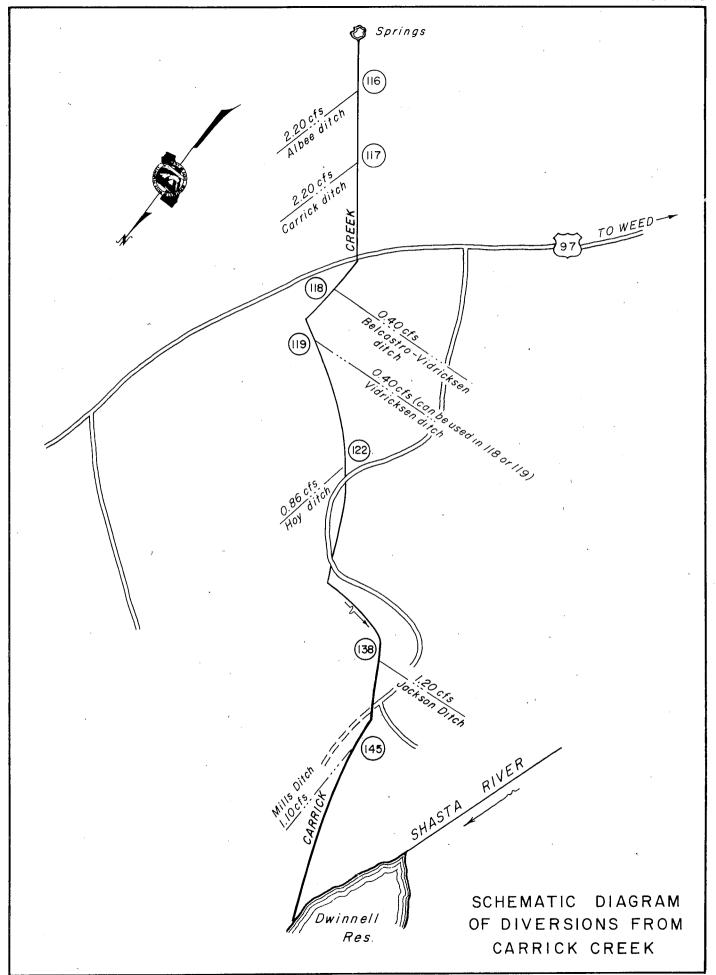
A concrete division structure was built in the Ayers and Hole-in-the-Ground Ranch diversion ditch from Shasta River immediately below Dwinnell Reservoir.

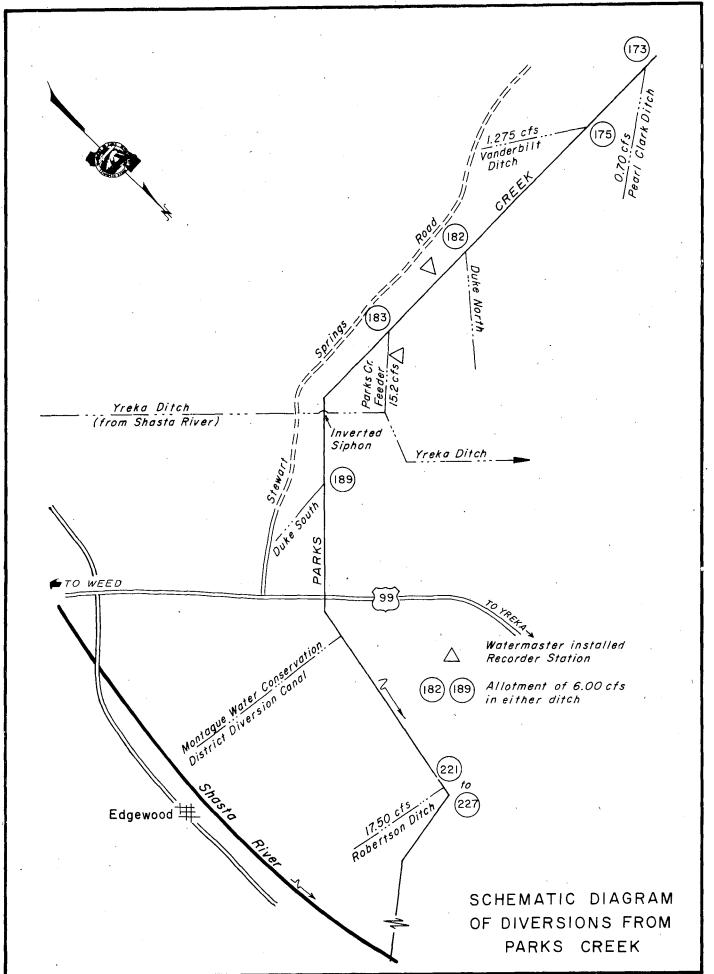


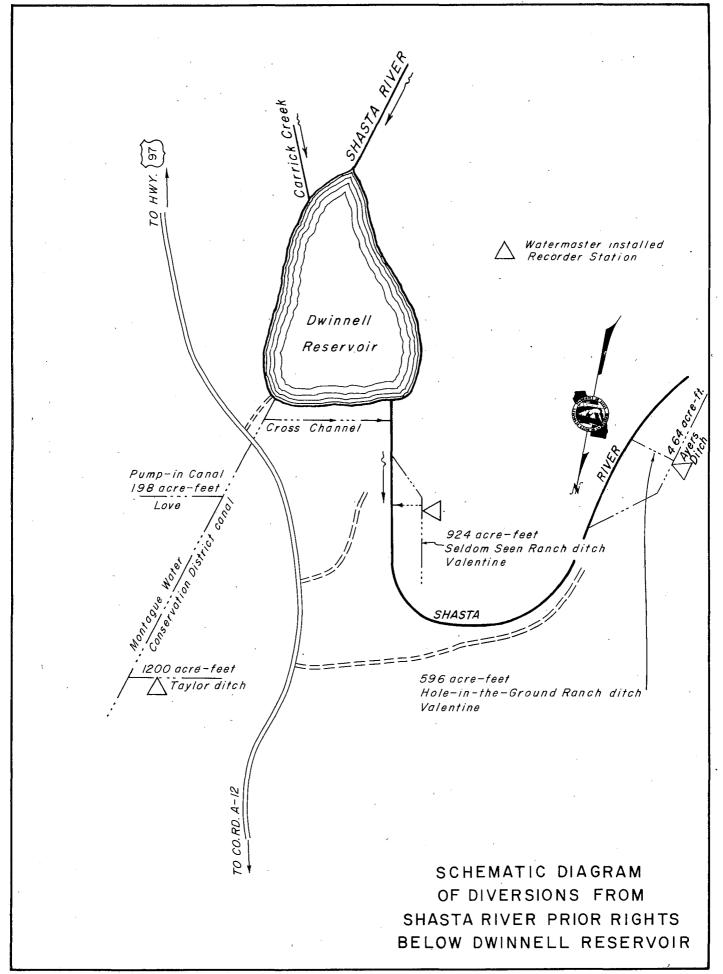


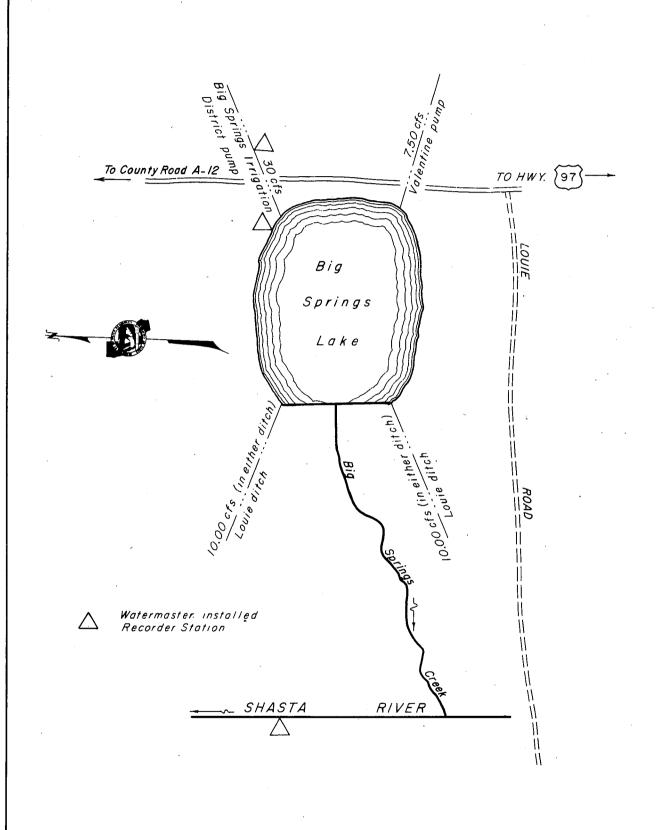




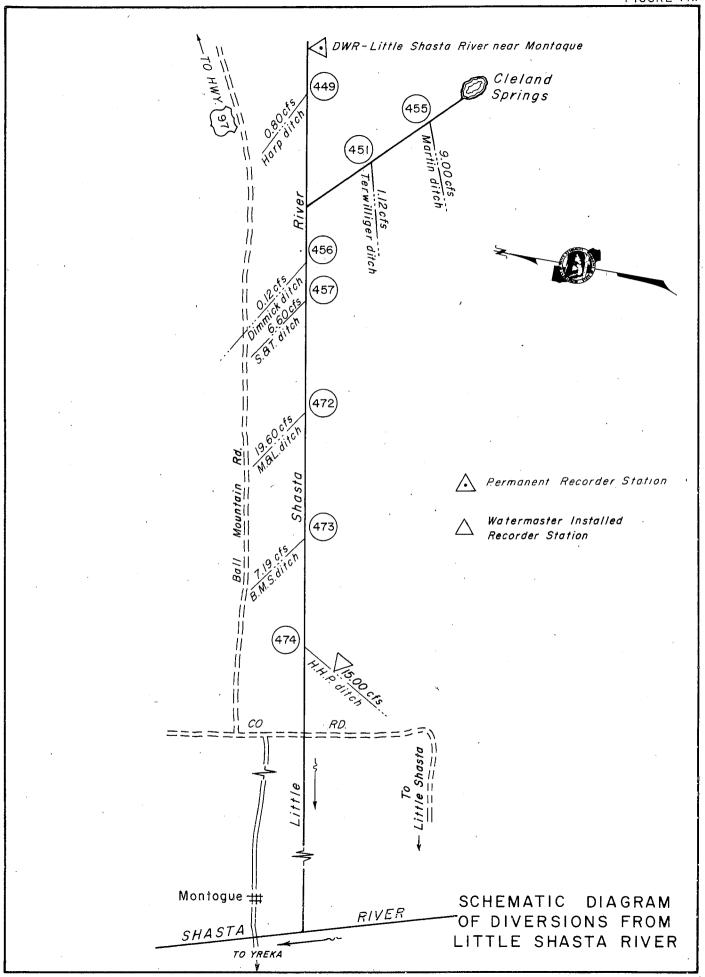








SCHEMATIC DIAGRAM OF DIVERSIONS FROM BIG SPRINGS LAKE



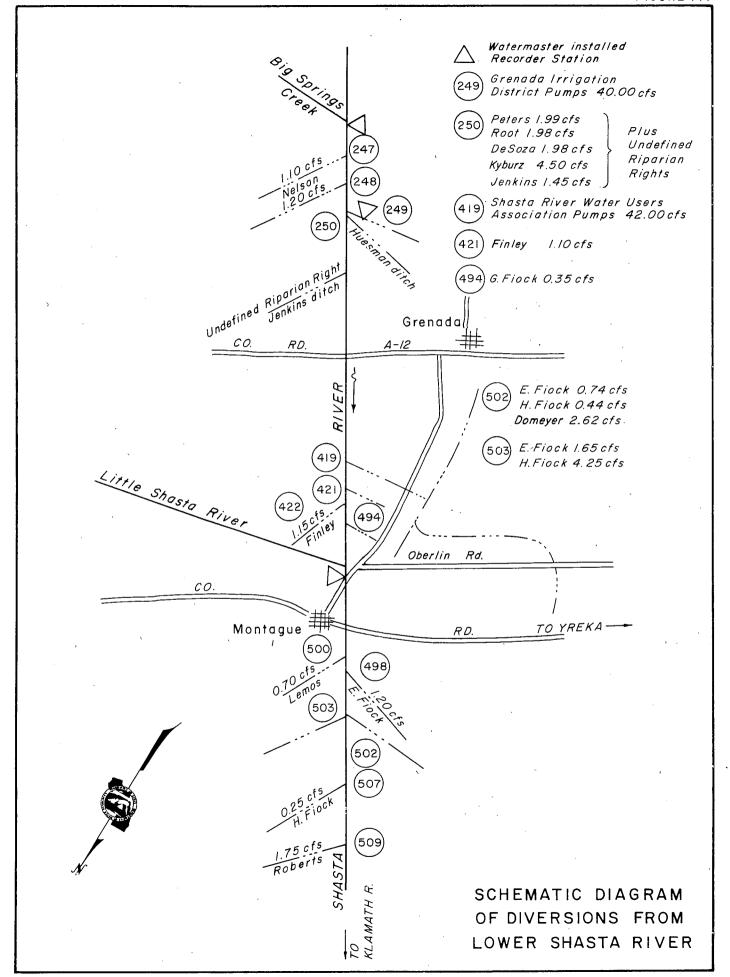


TABLE 33
DAILY MEAN DISCHARGE

Shasta River at Edgewood

March through September 1967 (In second-feet)

general control of the control of th			ar area	·		es	a in about the objective to the configuration because
Day	March:	April:	May	June	July	: August	September
1 2 3 4 5	67 70 69 66 67	101 98 94 88 94	101 101 96 88 94	202 168 142 142 162	88 83 76 66 53	9.4 9.4 8.9 8.5 8.9	5.7 7.0 6.4 6.0 6.7
6 7 8 9 10	66 62 57 51 78	147 113 105 101 147	98 128 217 329 321	193 230 214 214 205	46 44 40 38 35	8.2 8.2 7.8 7.8 6.0	6.4 5.1 4.6 4.1 4.6
11 12 13 14 15	69 66 66 67 152	145 126 126 124 157	230 196 155 160 205	199 181 162 162 170	34 28 23 22 20	6.4 6.7 6.7 7.4 8.2	4.3 5.1 5.4 6.0 5.4
16 17 18 19 20	1340 467 290 211 211	150 181 170 170 184	337 472 488 483 504	190 205 220 243 230	20 20 19 18 16	7.8 7.8 7.0 7.4 7.0	5.1 5.7 7.8 7.4 8.5
21 22 23 24 25	170 152 170 140 126	170 181 151 147 140	583 638 620 499 358	214 176 135 120 111	16 16 15 13	7.4 7.0 6.7 6.7 7.8	7.4 7.8 7.4 7.4 7.4
26 27 28 29 30 31	115 111 113 111 107 107	131 138 120 113 109	309 253 236 217 190 162	109 109 101 94 92	11 10 10 9.4 9.4	7.0 8.2 7.4 7.0 6.7 6.4	7.0 6.7 6.4 6.7
Mean	162	134	286	170	29.8	7.5	6.3
Runoff in acre-feet	9940	7980]	7590	10110	1830	464	373 - 42 - 43

TABLE 34 DAILY MEAN DISCHARGE

PARKS CREEK ABOVE EDSON-FOULKE YREKA DITCH

March through September 1967 (In second-feet)

Day : M	larch : April :	May	:_June_	: July	: August :	September
1 2 3 4 5	22 * 22	23 25 27 31 39	75 66 66 72 75	43 40 38 35 32	5.8 5.6 5.6 5.4	2.1 2.1 2.1 2.0 2.0
6 7 8 9 10	23 22 23 23 24	42 58 99 130 94	82 92 87 90 86	30 28 26 23 17	5.4 5.2 5.0 4.8	2.0 2.0 2.0 2.0 2.0
11 12 13 14 15	23 23 24 23 24	75 64 60 66 80	86 81 75 78 84	14 13 12 12 10	4.4 4.2 4.0 3.8 3.8	2.0 2.3 4.0 4.0 4.0
16 17 18 19 20	23 25 26 25 26	109 139 134 134 139	86 86 86 87 84	10 10 9.0 8.4 8.1	3.8 3.8 3.8 3.8 2.6	4.0 4.0 5.4 4.6 4.0
21 22 23 24 25	26 28 27 27 27	154 154 159 139 125	75 66 60 57 56	8.1 7.8 7.2 6.6 6.6	2.4 2.4 2.4 2.4 2.4	4.0 3.8 3.8 3.8 3.6
26 27 28 29 30 31	27 27 26 25 23	114 109 109 104 89 80	56 52 48 47 45	6.6 6.0 6.0 6.0 5.8	2.4 2.4 2.3 2.1 2.1	3.6 3.6**
Mean	24.6	93.7	72.9	16.2	3.8	3.1
Runoff in acre-feet	1320	5760	4340,	963	231	168

^{*} Beginning of Record

^{**} End of Record

TABLE 35
DAILY MEAN STORAGE IN DWINNELL RESERVOIR

October 1, 1966 through September 30, 1967 (in acre-feet)

			. <u> </u>			+ , 15 b				12 2 2 2 2		
Day	: <u>Oct.</u> :	Nov.	<u>Dec.</u>	Jan.	Feb.	<u> Mar.</u>	Apr:	<u>May</u> :	<u>June</u>	July :	Aug.	Sept.
1	5,530	5,040	12,595	21,500	27,425	30,720	37,050	41,045	46,690	45,160	3 ⁴ ,775	25,400
2	5,460	5,075	13,035	21,570	27,725	30,800	37,135	41.045	46,780	44,800	3 ⁴ ,415	25,175
3	5,355	5,075	13,640	21,640	27,950	30,800	37,220	41,045	46,870	44,530	3 ⁴ ,075	24,875
4	5,250	5,110	14,190	21,710	28,175	30,880	37,305	41,045	46,780	44,350	33,735	24,575
5	5,180	5,145	16,220	21,780	28,400	30,880	37,305	40,960	46,780	44,170	33,395	24,350
. 6	5,110	5,285	16,765	21,850	28,550	30,960	37,475	40,875	46,780	43,900	33,055	24,050
7	5,005	5,390	17,220	21,850	28,700	30,960	37,560	40,875	46,870	43,540	32,720	23,825
8	4,900	5,460	17,545	21,920	28,850	31,040	37,645	40,960	46,960	43,180	32,400	23,530
9	4,870	5,495	17,675	21,990	28,925	31,040	37,730	41,215	46,960	42,830	32,080	23,250
10	4,840	5,565	17,935	22,060	29,075	31,120	37,900	41,640	46,960	42,490	31,760	23,040
11	4,810	5,680	18,140	22,130	29,225	31,280	37,985	41,895	46,960	42,150	31,440	22,760
12	4,780	5,760	18,350	22,200	29,300	31,360	38,155	42,150	46,960	41,725	31,120	22,550
13	4,780	5,840	18,560	22,270	29,450	31,440	38,240	42,235	46,870	41,385	30,800	22,340
14	4,780	6,000	18,980	22,270	29,600	31,520	38,325	42,320	46,780	41,045	30,480	22,200
15	4,780	6,320	19,260	22,340	29,680	31,600	38,580	42,490	46,690	40,705	30,160	22,060
16	4,780	6,850	19,540	22,410	29,760	32,885	38,750	42,660	46,690	40,365	29,840	21,920
17	4,780	7,210	19,750	22,480	29,920	34,160	38,920	43,000	46,600	40,025	29,525	21,710
18	4,780	7,390	19,890	22,550	30,000	34,670	39,175	43,450	46,600	39,685	29,300	21,570
19	4,780	7,615	20,100	22,620	30,160	35,010	39,430	43,900	46,510	39,345	29,000	21,430
20	4,780	9,100	20,240	22,760	30,240	35,350	39,600	44,350	46,510	38,920	28,850	21,290
21	4,780	10,050	20,380	22,830	30,320	35,605	39,855	44,800	46,600	38,580	28,475	21,150
22	4,810	10,550	20,520	22,970	30,400	35,860	40,110	45,340	46,690	38,240	28,175	21,010
23	4,810	10,900	20,660	23,110	30,400	36,030	40,280	45,880	46,690	37,900	27,950	20,800
24	4,840	11,150	20,800	23,180	30,480	36,200	40,450	46,330	46,690	37,560	27,650	20,660
25	4,870	11,350	20,870	23,320	30,500	36,370	40,535	46,510	46,600	37,220	27,350	20,520
26 27 28 29 30 31	4,870 4,900 4,900 4,935 4,970 5,005	11,500 11,700 11,850 12,050 12,265	21,010 21,150 21,220 21,290 21,360 22,430	23,390 23,600 24,200 25,400 26,150 26,900	30,640 30,640 30,720	36,455 36,540 36,710 36,795 36,880 36,965	40,620 40,705 40,875 40,960 41,045	46,690 46,780 46,780 46,780 46,690 46,000	46,510 46,330 46,060 45,790 45,520 45,340	36,880 36,455 36,115 35,775 35,435 35,095	27,125 26,900 26,600 26,300 26,000 25,700	20,380 20,310 20,170 20,030 19,890

TABLE 36 DAILY MEAN RELEASES DWINNELL RESERVOIR

April through October 1967 (In second-feet)

Day	: April :	May	: June	July	: August	: September	: October
1 2 3 4 5		15 27 27 30 32	64 54 49 47 46	87 91 101 101	100 100 100 98 96	95 96 93 90 90	49 41 27 24 17
6 7 8 9 10		34 34 38 45 34	45 47 46 49 57	100 100 100 100 100	96 95 96 98	88 89 89 89 89	16 16 16 16 16
11 12 13 14 15		29 26 26 27 28	65 67 68 71 7 ⁴	99 99 99 99 100	96 94 94 94 94	89 85 75 67 64	16 16 16 16 16
16 17 18 19 20		33 49 51 57 57	76 81 81 82 83	96 96 96 98 98	96 97 97 97 85	59 57 49 54 60	16 .18 .24 .24 .18
21 22 23 24 25	0.0 *	62 66 70 70 72	71 56 37 37 40	97 96 96 96 98	89 93 93 93 93	61 60 60 53 54	9.0 9.0 8.0 8.0 4.0**
26 27 28 29 30 31	11 23 0.0 0.0 0.0	72 72 72 7 4 79 73	53 60 69 81 88	100 96 101 101 101	93 91 91 91 90 93	57 54 49 48 48	
Mean	17.0	47.8	61.5	98.2	94.5	70.4	18.2
Runoff in acre-feet		2940	3660	6040	5810	4190	904

^{*} Beginning of record ** End of record

TABLE 37 DAILY MEAN DISCHARGE

LITTLE SHASTA RIVER NEAR MONTAGUE

March through September 1967 (In second-feet)

Day :	March :	April	: May :	June :	July	: August	:September
1 2 3 4 5	16 16 13 10 12	18 21 23 20 20	38 50 56 67 69	118 100 99 83 79	20 19 18 18	8.6 8.6 8.2 8.6 8.6	5.9 5.9 5.9 5.9 5.9
6 7 8 9 10	12 14 16 18 12	21 21 23 25 26	74 97 126 169 151	76 72 67 65 61	17 . 16 16 16 15	8.6 8.6 8.2 8.2 7.8	5.9 5.9 5.5 5.5
11 12 13 14 15	9.7 15 14 14 15	22 21 25 24 28	117 102 97 105 125	56 54 51 47 45	15 14 14 13	7.8 7.8 7.4 7.4 7.4	5.5 5.5 5.2 5.2
16 17 18 19 20	73 86 62 40 47	23 22 22 25 25	133 134 131 133 129	43 40 38 39 36	12 13 12 12 12	7.0 7.0 7.4 7.4 7.4	5.2 5.2 5.5 5.5
21 22 23 24 25	52 51 54 37 29	28 32 29 31 36	129 131 133 128 123	36 34 30 29 27	12 11 11 11 11	7.0 7.0 7.0 7.0 7.0	5.5 5.2 4.5 4.5 4.5
26 27 28 29 30 31	25 24 23 21 18 18	28 32 31 27 27	118 117 114 106 97 90	26 24 24 22 21	10 9.8 9.8 9.4 9.0	7.0 7.0 7.0 6.6 6.2 6.2	4.5 4.5 4.5 4.5 4.5
Mean	28	25	110	51.4	13.5	7.5	5.3
Runoff in acre-feet	1720	1500	6760	3060	829	462	315

TABLE 38 DAILY MEAN DISCHARGE

SHASTA RIVER AT MONTAGUE-GRENADA HIGHWAY BRIDGE

March through September 1967
(In second-feet)

Day	: March :	April :	May	: June	July	: August	:September -
1 2 3 4 5	in a firm of a magazine firm		138 138 144 119 113	178 264 232 192 171	55 51 37 35 37	3 ⁴ 30 25 14 16	31 31 39 42 43
6 7 8 9 10			107 113 144 256 304	161 167 168 167 157	39 37 37 39	17 21 25 23 23	46 46 31 37 56
11 12 13 14 15			296 304 256 185 171	138 107 89 89	33 37 38 35 43	37 41 28 32 32	59 61 66 64 66
16 17 18 19 20		272 * 264	171 171 178 178 185	79 79 72 75 119	41 46 37 40 51	32 31 29 30 23	74 72 79 56 44
21 22 23 24 25		240 216 200 171 157	178 178 164 157 144	171 131 119 107 7 ¹ 4	32 37 23 28 28	30 23 23 51 46	61 131 121 125 107
26 27 28 29 30 31		151 151 164 164 157	125 119 119 119 119	77 69 69 56 51	28 30 30 32 32 34	31 28 32 40 37 51	7 ¹ 4 103**
Mean		192	168	124	36.8	30.2	65.4
Runoff in acre-feet		4580	10340	7360	2260	1850	3500

Beginning of Record End of Record

TABLE 39 DAILY MEAN DISCHARGE

SHASTA RIVER NEAR YREKA

March through September 1967 (In second-feet)

Day	: March	: April	:_ May	: June	July	: August	:September
1	177	231	196	230	66	33	52
2	177	219	187	385	61	32	37
3	168	219	196	351	48	25	37
4	159	201	164	279	47	22	44
5	159	201	151	228	47	16	42
6	159	208	146	208	46	16	42
7	159	215	153	202	44	14	46
8	147	212	181	200	39	16	41
9	144	194	336	196	36	24	35
10	173	165	455	189	43	26	49
11	232	124	440	168	41	22	61
12	287	118	471	123	39	45	65
13	292	105	391	105	36	28	70
14	295	98	290	100	33	26	75
15	279	114	240	98	41	33	73
16	380	153	247	92	37	30	78
17	651	194	223	92	35	28	77
18	580	323	240	80	42	26	94
19	400	394	238	83	36	29	82
20	358	384	245	122	53	30	55
21	335	353	240	371	37	22	57
22	314	311	242	195	37	26	108
23	303	295	218	151	30	19	122
24	290	271	198	134	21	17	119
25	275	221	176	96	33	49	121
26 27 28 29 30 31	264 259 251 255 251 239	219 215 234 239 219	154 132 149 152 152 150	85 79 87 74 62	26 24 28 29 25 29	39 37 34 35 44	78 95 115 112 87
Mean	271	222	231	162	38.4	28.6	72.3
Runoff in acre-feet	16680	13190	14190	9650	2360	1760	4300

South Fork Pit River Watermaster Service Area

The South Fork Pit River service area is located primarily in Modoc County with a small portion extending into the northern part of Lassen County. There are 37 water right owners in the area with total allotments of 350.97 cubic feet per second.

Water supply for this service area is obtained from the South Fork Pit River and its tributaries which rise on the western slopes of the Warner Mountains. The river flows in a westerly direction, entering South Fork Valley near Likely. It then flows north through the valley to its confluence with the North Fork Pit River at Alturas. The South Fork Pit River is joined from the east by Fitzhugh Creek near the middle of the valley and by Pine Creek just south of Alturas.

The major area of water use is in South Fork Valley between Likely and Alturas. South Fork Valley is about 16 miles long and 3 miles wide with the valley floor lying at an elevation of about 4,500 feet. The valley is bounded on both sides by a rocky plateau that separates it from the surrounding mountains.

A schematic drawing of each major stream system within the South Fork Pit River service area is presented as Figures 15 through 15d, pages 189 through 197.

Water Supply

The water supply for Pine Creek is derived mostly from snow-melt runoff. Therefore, runoff is usually small in the early spring, increases to a peak in May as temperatures rise, and then gradually decreases throughout the remainder of the season. Water users supplement their irrigation supplies from other sources whenever possible.

The water supply for Fitzhugh Creek consists of snowmelt runoff early in the season and supplemental water diverted from Mill Creek above Jess Valley later in the season. Surplus water from Fitzhugh Creek is diverted into the Payne and French Reservoirs through

Payne-French Ditch (Diversion 136) until about June, when the diversion is closed to supply downstream allotments. By July the creek has normally receded until only first priority allotments are available.

Payne Ditch (Diversion 1) is opened to import water from Mill Creek to Fitzhugh Creek when the snow has melted enough to allow access. This imported water is rediverted from North Fork Fitzhugh Creek through the Bowman Ditch to the Bowman Ranch. Return flow from Bowman Ranch to the creek is rediverted through diversion 136 for stockwatering purposes in the Payne-French Ditch.

The water supply for the South Fork Pit River is derived primarily from snowmelt runoff, supplemented by water released from West Valley Reservoir. A number of streams, which rise at high elevations, collect at the mouth of Jess Valley to form the South Fork Pit River. West Valley Reservoir is located on West Valley Creek which enters the river below Jess Valley.

Most of the water users on the South Fork Pit River, except those in Jess Valley, are in the South Fork Irrigation District. The district stores water in West Valley Reservoir, which has a capacity of 22,240 acre-feet, and releases it to the South Fork Pit River as a supplemental supply when the natural flow becomes insufficient to meet demands. This usually occurs during the middle of June. Reservoir releases, together with the natural flow, are distributed by the watermaster in cooperation with the Board of Directors of the irrigation district. Except for extremely dry years natural flow, combined with stored water, is sufficient to supply all demands for water on the South Fork Pit River throughout the irrigation season.

Records of the daily mean discharge of the several stream gaging stations in the area are presented in Tables 40 through 43, pages 199 through 202.

Methods of Distribution

Irrigation of the lands along tributary stream is accomplished by flooding through use of small lateral ditches. The water is distributed on a continuous-flow basis to each user through gravity

flow diversion systems. In some cases, rotation is practiced among several users.

Most irrigation in the South Fork Pit River area is by the check and border method. The lands receive water essentially on demand by supplementing natural flow with releases from West Valley Reservoir. However, irrigation between the various ranches must be coordinated to eliminate large peak demands from the reservoir and to use the return flow as much as possible. Actual distribution varies each year as there is no specific irrigation schedule in use.

The South Fork Pit River decree and the Pine Creek Agreement (see Table 1) establish a two-priority class system of distribution for the Fitzhugh Creek and Pine Creek stream systems. Distribution to the South Fork Pit River users (the decree provides for a two-priority class system) is carried out on an equal and correlative basis in accordance with the water requirements for each ranch. This method of operation was made possible by construction of West Valley Reservoir in 1937.

1967 Distribution

Watermaster service began April 1 in the South Fork Pit River service area and continued until September 30. George H. Pape, Associate Engineer, Water Resources, was watermaster during this period.

The water supply for the 1967 irrigation season was well above average. Cold weather and late storms maintained a near record snowpack in the Warner Moutains until late in the spring. The extremely hot and dry summer, however, caused the flow of the smaller tributaries to fall off to only average amounts by late summer.

Pine Creek. Due to cold weather and the resulting low runoff, very close regulation was required during April and early May. Flow increased to over 100 percent of all allotments (2 priorities) by late May and remained fairly steady throughout June. Since the Modoc Refuge did not use its full allotment during some of this time, excess water was diverted for storage in Dorris Reservoir. As the flow decreased in the latter part of the season, those water users with more than one ditch followed their usual practice of rotating their allotments in

their various ditches. Flow had decreased to approximately 50 percent of first priority allotments by the end of the season.

Fitzhugh Creek. Regulation began in late May when the Yankee Jim and Bowman Ditches became accessible. At that time there was more water than required to fill all allotments (2 priorities). The Payne Ditch from Mill Creek was opened on June 30. This additional water was added to the Bowman Ditch allotment. Flows gradually decreased from surplus to approximately 60 percent of first priority allotments at the end of the season.

South Fork Pit River. The natural flow of the South Fork Pit River was sufficient to meet all demands until July 14, at which time releases from West Valley Reservoir began.

Storage in the reservoir increased from 12,200 acre-feet at the beginning of the season, until its capacity of 22,240 acre-feet was reached on June 3. Water was released continuously from the reservoir for the rest of the season. At the end of September, 12,400 acre-feet remained in storage.

Control of the State of the Sta

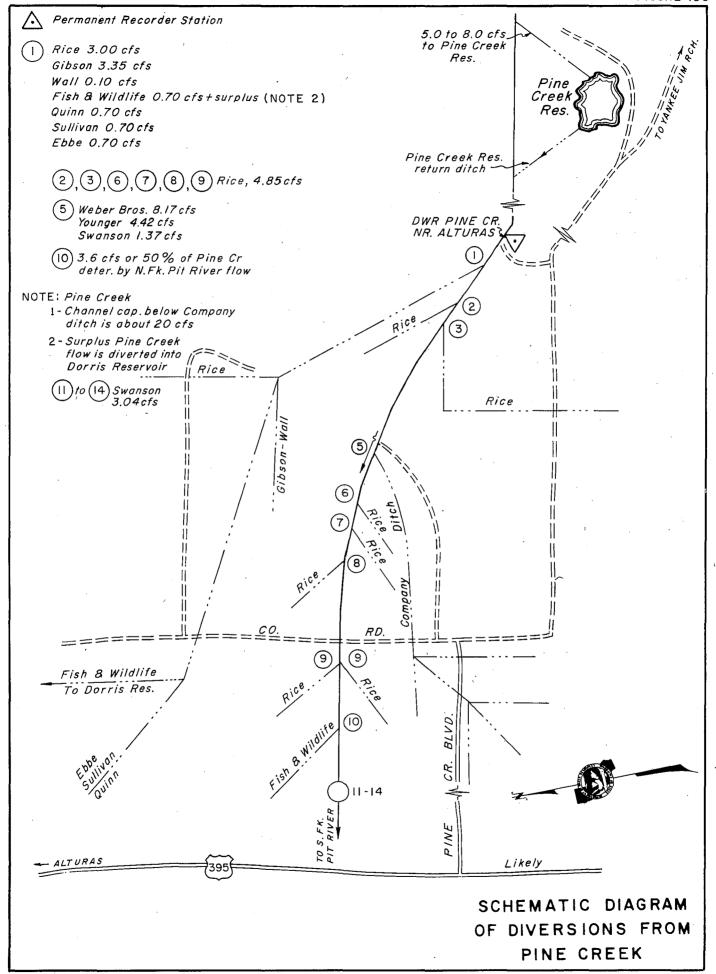
and the control of the first of the first output to be set the secretary of the second of the control of the co

and the state of the control of of the contro

"我们"来,我是不知道就要一块的人的是说。

The second of the Laboratory at the late of the second

-188-



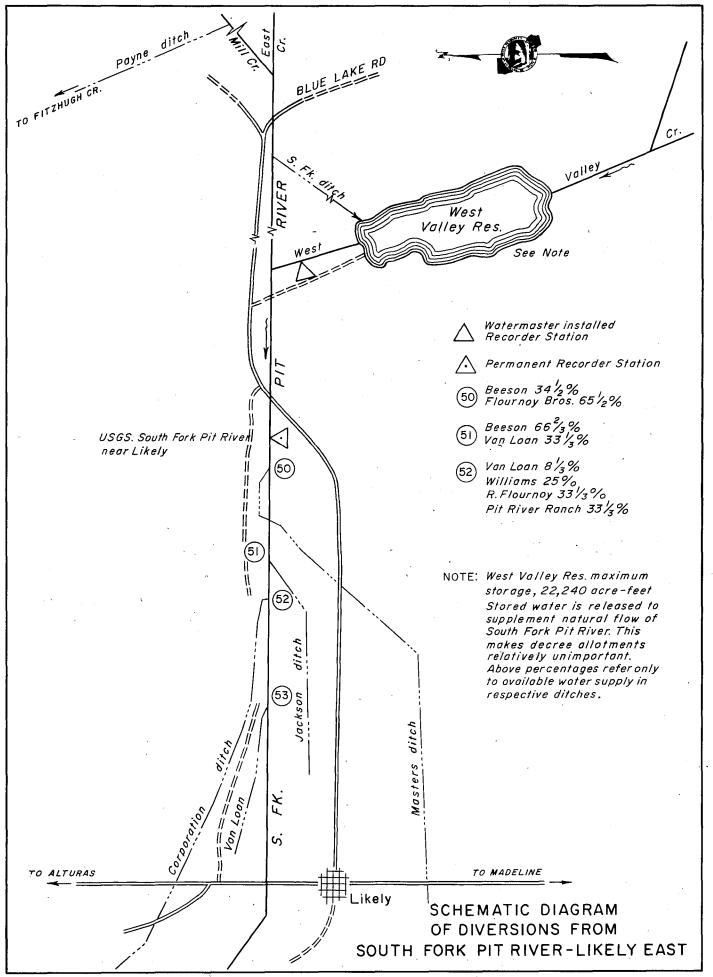
Canal

East

Side

SCHEMATIC DIAGRAM

OF DIVERSIONS FROM FITZHUGH CREEK



DATLY MEAN DISCHARGE

South Fork Pit River near Likely March through September 1967 (In second-feet)

Day	<u> </u>	March	:_Ar	ril	. May	:_	June	_:_	July	: August	:Sept	embé
1	1 -	**										
2												· .
3												
3 4 5												•
5												
6	1 1	. e :										. /
	.;			:								
7 8 9 10					1							
9										,		ć.
10						,						
	× .	:							-			
11 12 13 14 15	•		Data 1	ınavai	lable at	_tim	e of	prin	ting.	Will be		
13 TC			publis	shed i	n U.S.G.	ಶ .,	"1967	Wat	er Res	ources	.a.	
14			Data I	or ca	Lliornia Northern	Pa و صري	ru I-	Suria ein	ace wa	ter Recor ntral Val	us,	
15			V O TOTAL		MOT OTICETT	GT C	a u Da	oTII (and Ce	morar var	Tel.	**
	Į.									•		
16	• .										•	
17 18												
ΤΩ		Ž.			•					•		
19 20												4.
21				* .					ļ			
22				er.					'.			
23 24												1
24 25					. •							
2)									Ē.			•
26		•			•							:
27	•			,	1 1							
28												
29				~	r F							
30												
31			· 					<u> </u>	1215-1416	stania (h. 1888)		
an '												
							<i>n</i> : _ a -a				******	
noff	in											* -1
re-fe	et.											

TABLE 41 DAILY MEAN DISCHARGE WEST VALLEY CREEK BELOW WEST VALLEY RESERVOIR

Windshift all the con-

Day	March : April : May : June :		August:	
1 2 3 4 5	1.0* 10 33	40 35 31 26 21	65 65 70 100 98	185 183 183 181 132
6 7 8 9 10	94 116 126 135 140	19 18 18 12 10	98 95 95 92 114	60 40 31 15 63
11 12 13 14 15	143	7.5 19	130 130 20128 128 128 128 128	62 62 62 61 61
16 17 18 19 20	106 100 93 88 69	32 32 32 32 32	128 128 128 128 128	61 61 38 28 28
21 22 23 24 25	62 62 61 60 59	32 32 32 32 32	104 100 100 100 104	27 27 27 26 26
26 27 28 29 30 31	58 58 51 47 45	32 32 32 32 32 60	144 144 144 176 188 185	26 25 ** 25**
Mean	84	27	118	64
Runoff in acre-fee		1680	7270	3580 · · · · · · · · · · · · · · · · · · ·

^{*} Beginning of Record

^{**} End of Record

TABLE 42 DAILY MEAN DISCHARGE

Fitzhugh Creek below Diversion No. 137

Day		March	•	April	: May	: June	•	July	• August	:September
	······································	Mar CII	 '-	WATTT	- May	• ourse	— •–	oury	• Augus o	• pe poember
1								* *	•	
1 2 3 4 5										•
ა ს		•								
5										
										•
6 7 8 9 10							,			
. 7									· . · ·	1
9.					• •				4	
10		• .								
11		i i				A T.D. A T.D. A T.D. M. T.	_			•
12			i .	•	NO RECORD	AVAILABLI	반			
11 12 13 14					FOR 1967	SEASON			-	
15										*
						٠;		•		
16		٠.			14.					
17 18 19 20										• '.
19			:						. *	
2Ó										
					,					
57 5T			•			ø		,	•	
21 22 23 24 25										:
24			• .						-	
25					***	ů.				
. 06			5						6	,
26 27			,		4					•
27 28 29				•						
29		•			•					
30						,	•			• ^
31								- A-	s a Angles Ave	
Mean										
	- -									
Runoff					* ***	. +y*				
acre-fe						· · · · · · · · · · · · · · · · · · ·			***	

TABLE 43 DAILY MEAN DISCHARGE PINE CREEK NEAR ALTURAS

A CONTRACTOR SERVICE

	March :				Company of Tables	August :	September
1 2 3 4 5	8.4 8.4 7.9 8.7 9.7	10 9.7 9.7 9.7 10	22 21 15 12 13	76 68 64 67 78	46 45 44 42 40	18 18 18 17 17	12 12 12 13 13
6 7 8 9 10	8.7 8.7 8.7 8.7	10 11 23 15 11	13 17 22 27 27	90 77 73 76 78	39 38 36 34 33	17 16 16 16 16	13 12 12 12 12
11 12 13 1 ¹ 4 15	8.9 8.7 9.7 9.2 8.4	10 10 10 10 11	27 24 20 20 25	81 76 73 69	30 29 29 28 28	16 15 15 15 15	12 12 11 11
16 17 18 19 20	10 12 10 10	11 10 11 12 12	31 37 43 47 49	65 65 66 67 67	28 27 26 25 24	15 15 15 15 15	11 11 12 12 11
21 22 23 24 25	9.7 9.7 10 10 9.7	9.4 12 11 12 26	52 62 77 90 96	67 66 74 60 56	23 22 22 21 20	14 14 14 13 14	11 10 11 11
26 27 28 29 30 31	9.7 9.7 9.7 8.7 10	27 26 34 24 20	96 94 92 90 85 81	52 50 48 48 47	20 19 19 19 18	14 14 13 13 13	11 11 10 10 11
Mean	9.4	14.2	46.0	67.4	28.8	15.1	11.5
Runoff in acre-feet	576	848	2830	4010	1770	928	682

Surprise Valley Watermaster Service Area

The Surprise Valley service area is located in the extreme eastern part of Modoc County. There are 170 water right owners in the service area with total allotments of 313.75 cubic feet per second. The source of water supply is comprised of 10 individual stream systems rising on the eastern slope of the Warner Mountains. These streams are fed by snowmelt runoff and traverse a fast precipitous course down the eastern slope of the Warner Mountains to the valley floor. From that point, numerous, scattered diversion ditches convey water to the irrigated lands. The place of use is situated in a long, narrow area extending in a north-south direction between the foot of the Warner Mountains and the Alkali Lakes which lie in the center of Surprise Valley.

Surprise Valley extends from nearly the Oregon border on the north to Lassen County on the south, a distance of approximately 50 miles. The valley varies in width from about 8 to 10 miles. It is bordered on the north, south, and west by the rugged Warner Range and on the east by the typical mountainous desert terrain of Nevada. The valley floor is at an elevation of approximately 4,700 feet.

A schematic drawing of each major stream system within the Surprise Valley service area is presented as Figures 16 through 16j, pages 211 through 231.

Water Supply

The water supply is derived almost entirely from snowmelt runoff, with only minor spring-fed flows occurring in the latter part of the season. There are no known economically justified storage sites on the service area creeks. Because of the lack of regulatory storage, the available water supply at any specific diversion point may vary considerably within a few hours. An extreme differential in day and night temperatures causes extensive variation in snowmelt runoff quantities. This problem is further aggravated by the relatively

short and steep drainage area. In addition, occasional summer thunder showers may cause a creek to discharge a flow of mammoth portions for several hours. These flashes are apt to cause considerable damage in washouts and debris deposition, and are of such short duration that no beneficial use can be made of the water.

Records of the daily mean discharge at several stream gaging stations within the service area are presented in Tables 44 through 54, pages 233 through 243.

Method of Distribution

The continuous flow method of distribution is employed on most creeks; however, in a few instances the available water supply is rotated among the users in accordance with either decree schedules or by mutual agreements.

The first day of the Same Said Contraction of the Said Said

Alfalfa and meadow hay, the major crops grown in the valley, are irrigated in most instances by wild flooding. There are also considerable lands dependent upon subsurface irrigation. In addition, recent development of numerous deep wells has popularized sprinkler irrigation. This type of irrigation, however, is limited because of available ground water supply and costs of installation and maintenance.

To facilitate distribution of irrigation waters, construction of permanent diversion dams, headgates, and measuring devices has been stressed during recent years. Although these control devices do not solve the problems of discharge variation and debris deposition, they do provide significant assistance in solving water measurement and distribution problems.

The several decrees (see Table 1) which apply to the Surprise Valley service area establish the following number of priority classes for the various stream systems: Bidwell Creek - four until July 10, five thereafter; Mill Creek - four; Soldier Creek - rotation March 19 to June 19 (upper users eight, lower users seven), twelve priorities are in effect during the remainder of the year; Pine Creek - a rotation schedule based on accumulative flow in acre-feet is used; Cedar Creek - four; Deep Creek - five; Owl Creek - twenty-one; Rader Creek - six;

Eagle Creek - four; and Emerson Creek - four.

1967 Distribution

Watermaster service began March 19 in the Surprise Valley service area and continued until September 30. John A. Nolan, Water Resources Technician II, was watermaster during this period.

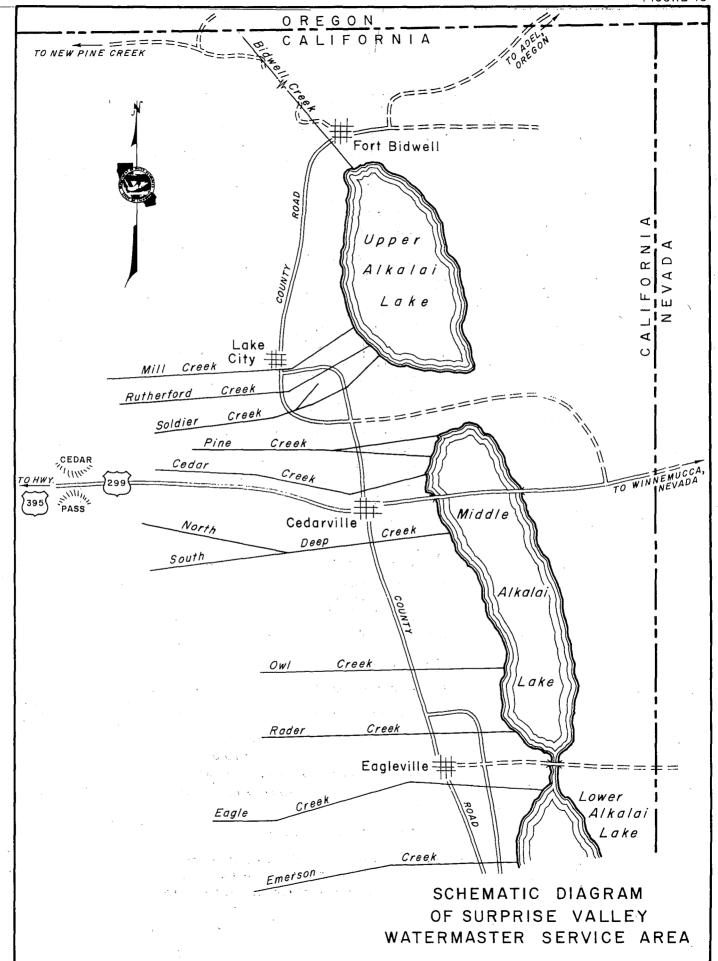
The 1967 irrigation season was very successful despite only average seasonal runoff in most streams, and considerably below average in a few whose headwaters are at relatively low elevations.

The snowpack on the Warner Mountains was well below normal at the beginning of the irrigation season. Frequent snowstorms and low temperatures during April and May, however, brought the snowpack to normal or above during the latter part of spring. Due to a fairly constant rate of snowmelt the runoff was sufficient to supply most allotments through the first half of the irrigation season. This produced an excellent yield for the first hay cuttings throughout the valley. Enough water remained in most creeks to begin irrigation for a second growth of hay. In most years only a few high priority water right owners can expect this additional water in July. However, the flows began to recede quickly during July, and by late September were essentially down to domestic and stockwater rights.

The seasonal runoff (April 1 through September 30) of the various streams ranged between 60 and 130 percent of the long-time averages.

Bidwell Creek. Total stream runoff available to Bidwell Creek users during the period from April 1 through September 30 was 15,560 acre-feet or approximately 130 percent of normal (based on records since 1955).

Due to a good snowpack in the Bidwell Creek basin there was enough runoff to supply all allotments until mid-June (four priorities until July 10, five priorities thereafter). From then until July 10 only third priority allotments were supplied. Bidwell Creek then receded at a fairly constant rate, reaching a low of approximately four cubic feet per second in late September. This was enough water to supply only first

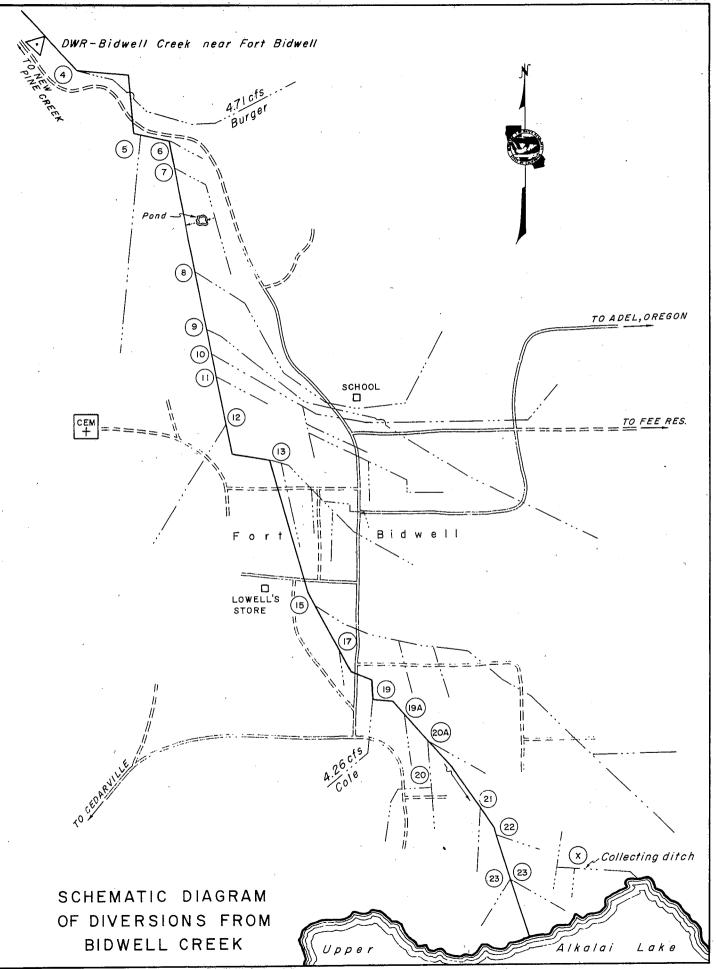


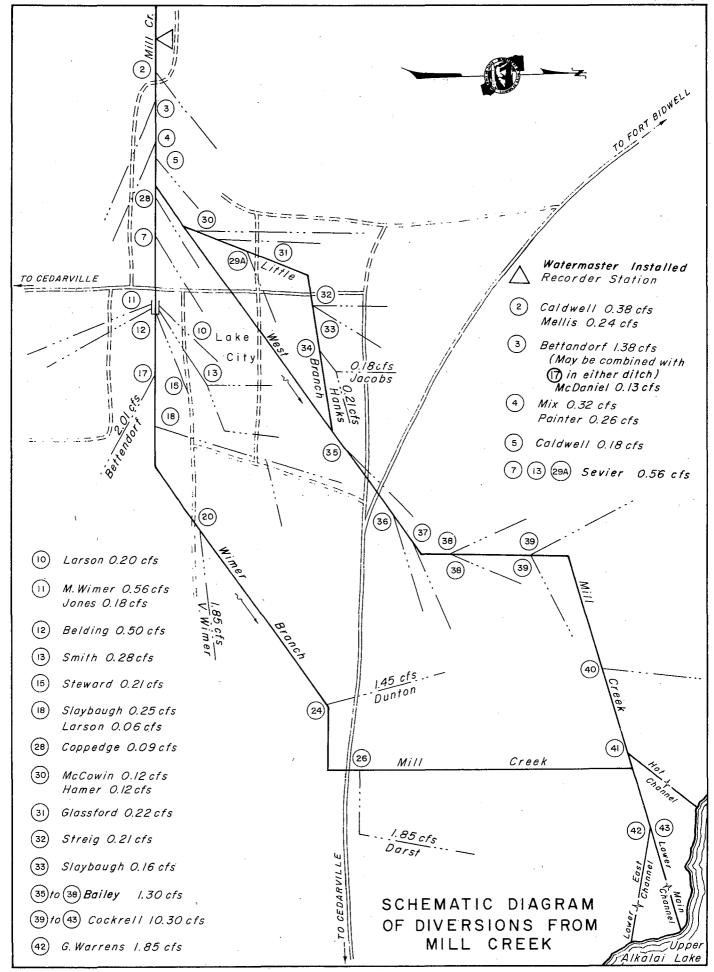
Permanent Recorder Station

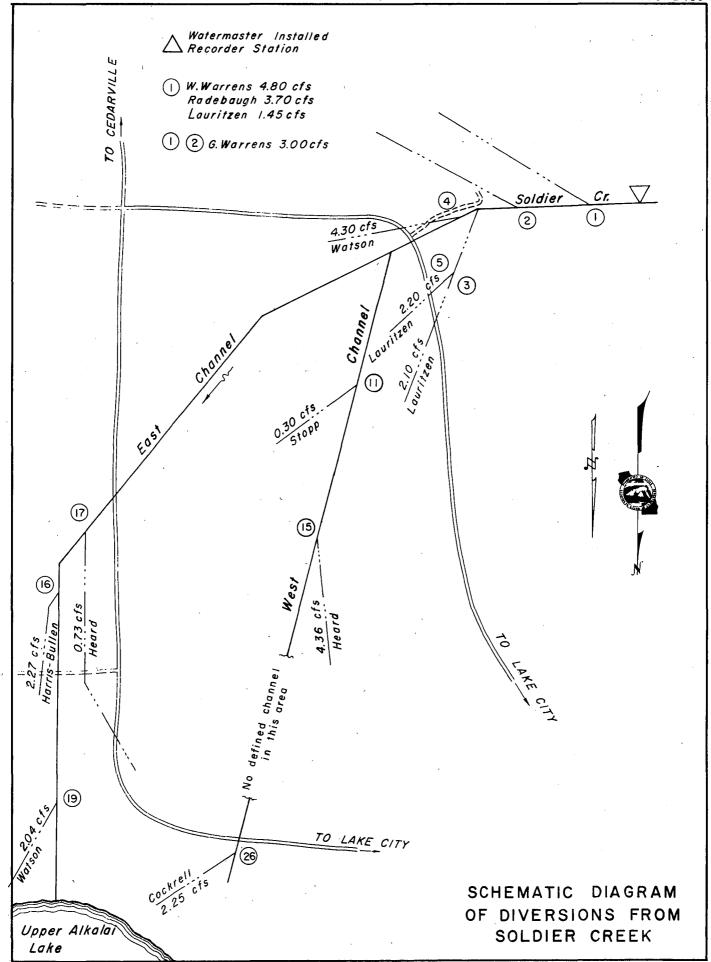
March 15 through July 9 (major season of use)

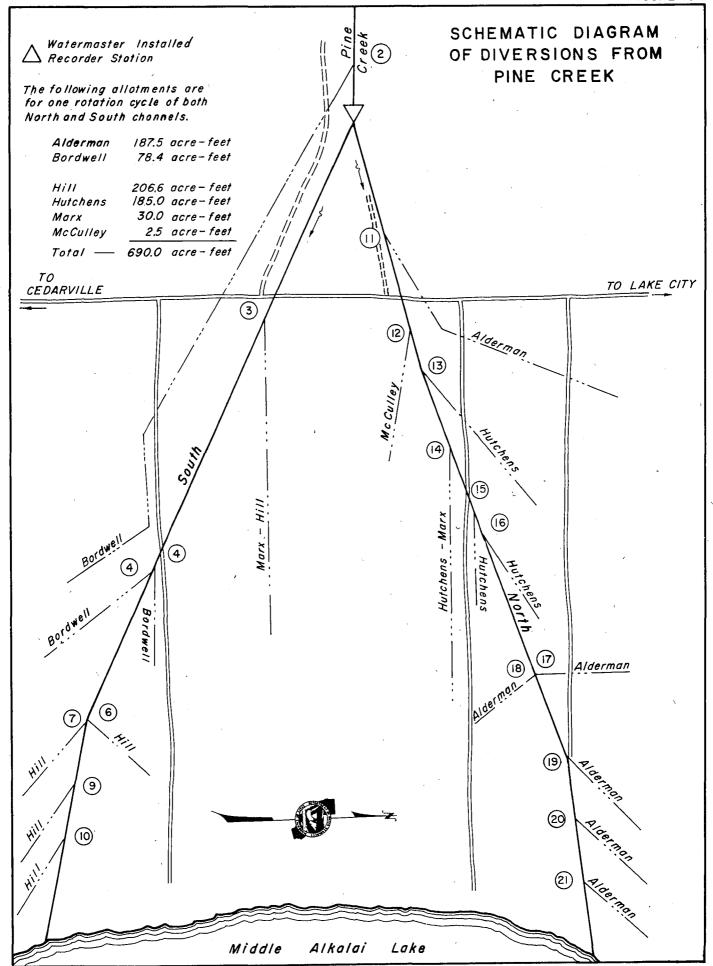
- 5 G. Peterson 0.38 cfs C. Bucher 0.45 cfs Sweeney 0.07cfs
- 6 Sweeney O.18cfs
- (7) G. Peterson 0.50 cfs
- 8 McConnaughy 7.24 cfs* Town Users 0.06 cfs
- 9 Conlan 7.63 cfs Town Users 0.22 cfs
- (10) Carey 6.13 cfs
 C. Bucher 0.66 cfs
 P. Peterson 0.44 cfs
 Town Users 0.30 cfs
- (II) C.Bucher 0.38 cfs 💛
- (12) U.S. Indian Service 0.46 cfs Green 0.14 cfs Baty 0.12 cfs
- (13) McConnaughy 5.24 cfs*
 Town Users 0.44 cfs
- (15) Fee 8.94 cfs Sagehorn I.34 cfs O'Callaghan 2.88 cfs Toney 0.42 cfs
- (17) Kober 0.05 cfs
- (20) Sagehorn 0.88 cfs
- (19A) (20) (20A) Carey / 43 cfs
- (21) Sagehorn 1.39 cfs
- (22) O'Callaghan 0.38 cfs
- (23) Sagehorn 1.79 cfs
- Sagehorn If flow is less than
 3.82 cfs, deficiency is made up by
 additional diversion through (15)
 if Fee Ranch allotment is satisfied.
- * May be used in either ditch

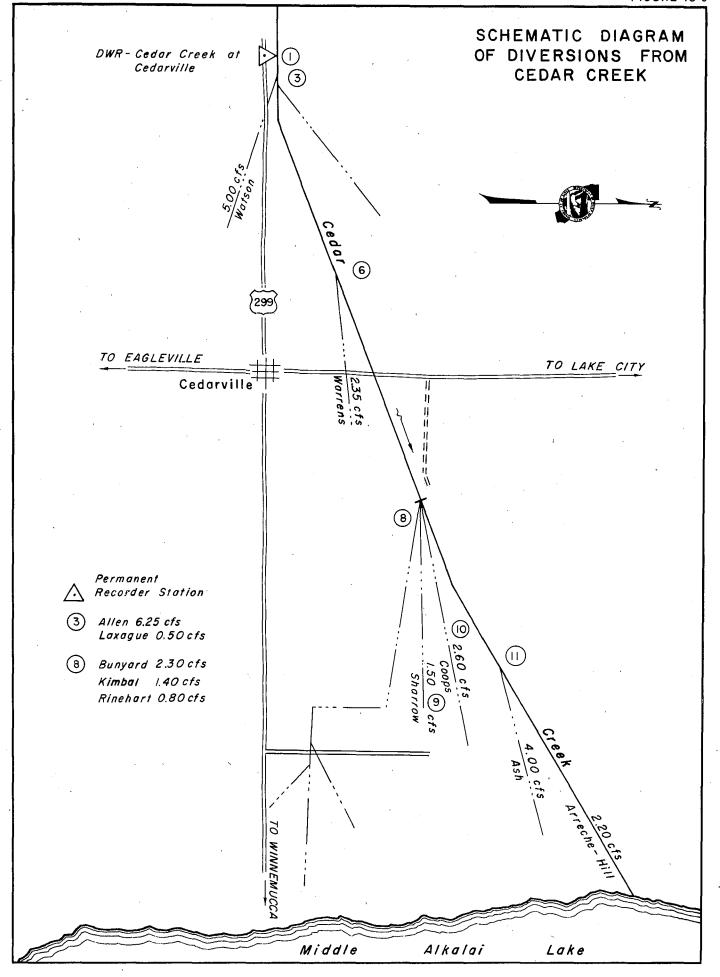
NOTE: Sagehorn and O'Callaghan waters may be used in any of their ditches at discretion of user and watermaster.

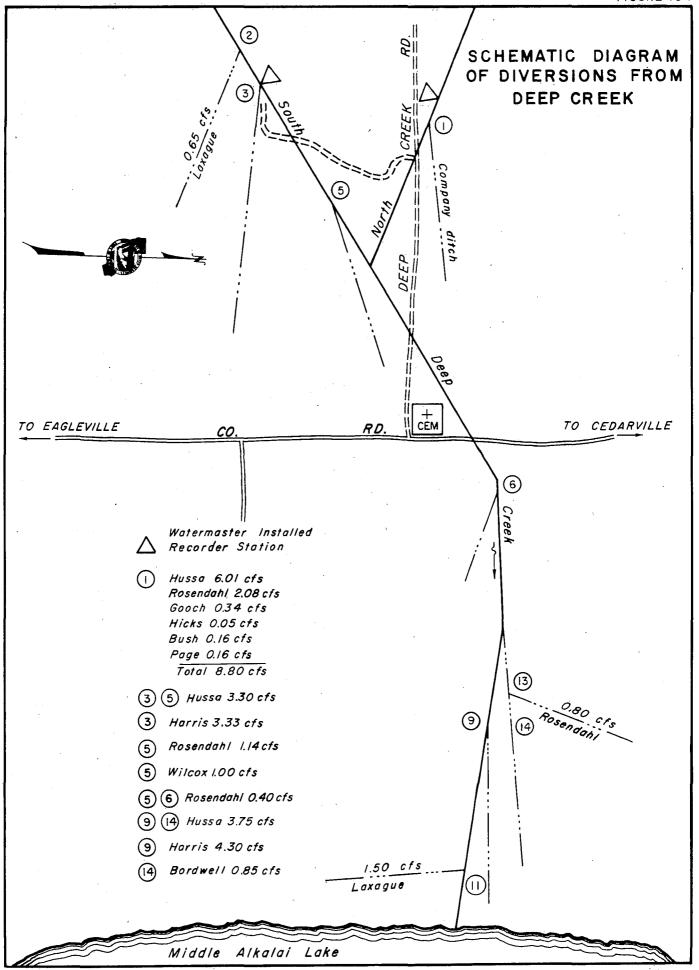












Watermaster Installed A Recorder Station Allen-Arreche ditch W. Cockrell 2.47cfs J. Stevenson 1.81 cfs

Pipe

Cook & McClintock ditches L. Cockrell 17.18 cfs

Heryford ditch *Berryessa 5.98 cfs

Stiner ditch *Berryessa 3.20 cfs

Company ditch Radabaugh 1.81 cfs S. Stevenson 1.26 cfs Stanley 0.99 cfs

Dalton ditch

Ennis-Arreche ditch

** May be used in either ditch

Total allot ments - 39.75 cfs

Middle Alkalai Lake

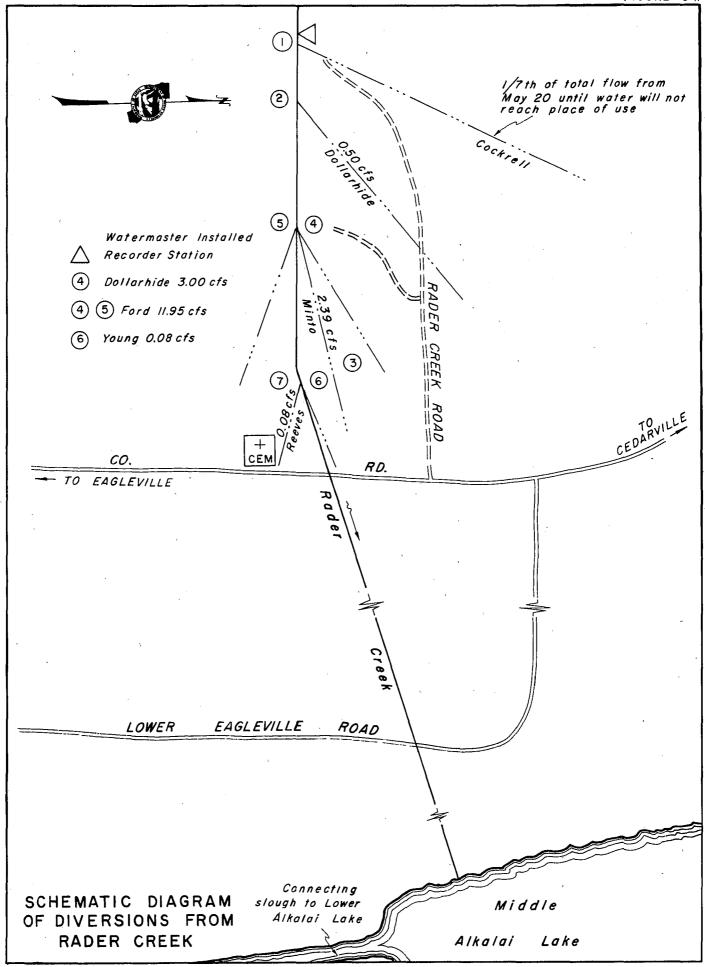
OWL CREEK FLOOD CONTROL & WATER CONSERVATION **PROJECT**

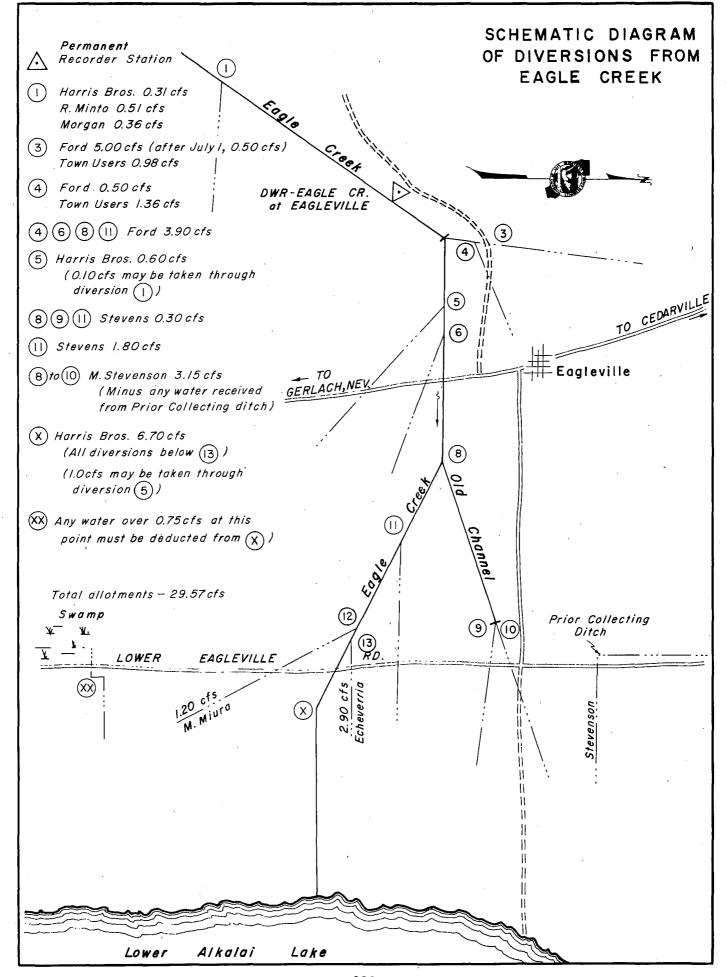
> Underground Pipe

DIVISION вох

Cook ditch

EÄĞLEVILL





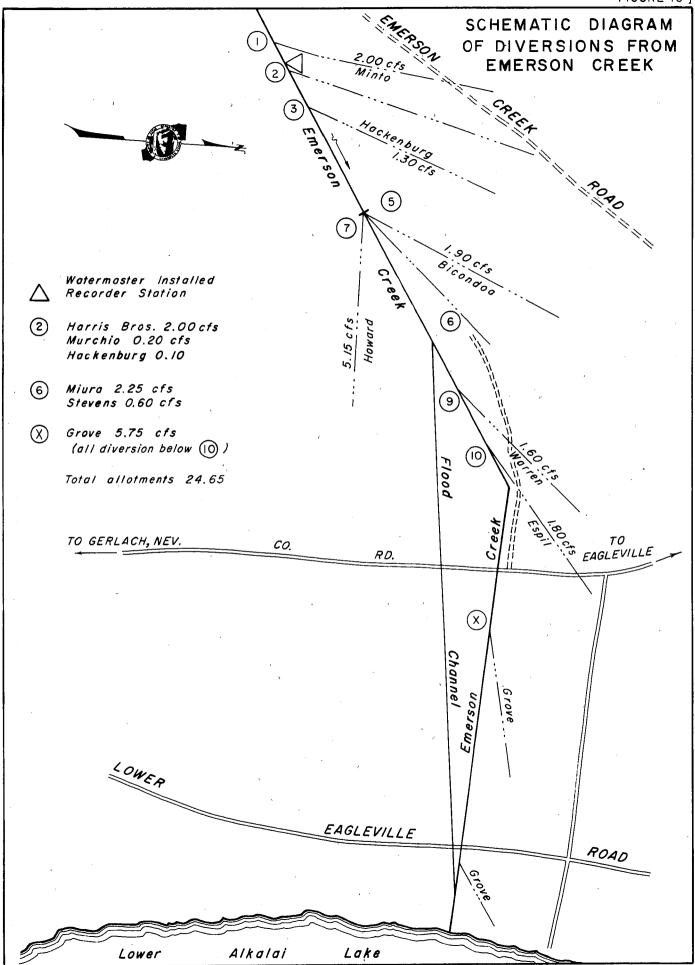


TABLE 44 DAILY MEAN DISCHARGE

BIDWELL CREEK NEAR FORT BIDWELL

-					e e e	<u>-</u>			, .
<u>.</u>	Day :		April :	May	June :	July	: August	:September	_
	1	8.8 8.8	10 10	12 12	108 88	31 30	9•7 9•3	3.2 2.9	
	2 3 4 5	8.5	10	14	85	28	8.4	3.2	
	5	7.9 8.2	10 11	16 19	81 85	26 26	8.0 7.6	3.2 4.2	
	6	8.2	11	26	96	25	8.0	4.2	
	6 7 8	8.2 8.8	12 12	48 78	100 100	25 23	8.0 7.6	3.6 3.2	
	9 10	10 10	14 13	157 130	104 100	22 21	7.1 6.7	3.2 3.2	
	11			85	y y	20	6.0	4.6	
	12	10 9.7	13 12	- 66	96 92	19	5.6	3.9	
	13 14	9.7 8.5	13 13	56 60	78 72	18 17	5.6 5.0	3.6 3.6	
	15	8.5	12	78	75	16	4.6	3.6	
	16 17	12 15	12 12	146 201	75 78	19 18	4.6 4.2	3.6 3.6	
	18	15 14	´12	260	75 78 78	16"	4.2 4.2	3.9 3.6	
	19 20	13	11 11	279 292	78	15 15	4.2	3 . 9	
	21	13	11	306	75 66	15 14	3.9	3.6	
	22 23	13 13	11 11	318 318	58	13	3.9 3.9	4.2 4.2 3.6	
	23 24 25	13 12	´11, 11	279 239	51 48	13 12	3.9 3.9 3.9 3.6	3.6 2.9	
	26	12	12	163	44	11	4.6	2.9	
	27	12	12	151	42.	11	4.6	3.2	
	28 29	12 12	12 12	157 175	40 36	11 11	3.9 3.6	3.6 4.2	
	30 31	11 11	12	146 126	33	11 11	3.2 3.2	4.2	
 Me	an	10.9	11.6	142	74.6	18.2	5 . 5	3. 6	-
Ru	noff in		**************************************						-
ac	re-feet	668	692	8750	4440	1120	339	215	

TABLE 45 DAILY MEAN DISCHARGE

MILL CREEK ABOVE ALL DIVERSIONS

March through September 1967 (In second-feet)

Day :	March	. April	· May	June -	July	: August	:September
1 2 3 4 5	There is a second of the secon	3•7* 3•7 3•7 3•9	3.4 3.4 4.1 5.3 4.4	40 36 36 36 39	22 20 20 18 17	3.0 2.9 2.8 2.7 2.7	2.0 2.0 2.0 2.0 2.1
6 7 8 9 10		4.1 4.4 4.9 4.9 5.1	4.9 10 22 33 25	43 46 46 43 42	17 17 16 15 14	2.7 2.7 2.6 2.5	2.1 2.0 2.0 2.0 2.0
11 12 13 14 15		4.4 4.4 4.4 5.1 6.9	17 20 22 25 37	42 40 42 42 42	13 12 12 11 10	2.5 2.4 2.4 2.4 2.4	2.0 2.0 2.0 2.0 2.0
16 17 18 19 20	2 (t	6.9 5.3 3.9 3.0 2.9	40 43 50 53 55	42 40 40 39	11 10 8.3 6.1 5.7	2.3 2.3 2.3 2.3 2.3	2.0 2.0 2.0 2.0 2.0
21 22 23 24 25		2.8 2.9 3.0 3.0	59 60 60 62 64	38 37 34 31 30	6.1 5.3 4.9 4.4 3.9	2.3 2.2 2.2 2.2 2.2	2.0 2.0 2.0 2.0 2.0
26 27 28 29 30 31		5.1 5.7 5.3 3.9 3.5	57 55 55 55 50 44	29 28 27 25 23	3.7 3.7 3.5 3.7 3.4 3.3	2.2 2.2 2.2 2.1 2.1 2.0	2.0 2.0 2.0 2.0 2.0
Mean		4.3	35.4	37.3	10.4	2.4	2.0
Runoff in acre-feet		254	2180	2220	636	148	119

^{*} Beginning of Record

 $\mathcal{S}_{\mathcal{A}} = \{(1, 1, \dots, 1) \mid 1 \leq i \leq n \}$

TABLE 46 DAILY MEAN DISCHARGE

SOLDIER CREEK ABOVE ALL DIVERSIONS

Day :	March	: April	: May	: June	: July	: August	:September
1 2 3 4 5		3.3 3.5 3.5 3.3 3.3	3.5 3.5 3.7 3.8 4.8	14 11 12 13 13	3.3 3.0 3.0 2.8 2.8	2.2 2.1 2.2 2.2	1.4 1.4 1.4 1.4
6 7 8 9 10	,	3.3 3.5 3.8 3.8 3.8	12 7•7 3•7 2.8 3•0	10 9.8 7.7 6.5 5.3	2.8 2.6 2.6 2.6	2.2 2.1 2.1 2.0 2.0	1.4 1.4 1.4 1.4 1.4
11 12 13 14 15		3.5 3.7 3.8 3.7	3.3 4.5 8.1 12 17	5.0 4.2 3.5 3.3 3.0	2.6 2.5 2.4 2.5 2.6	2.0 2.0 2.0 1.9 1.9	1.4 1.4 1.4 1.4 1.4
16 17 18 19 20		3.5 3.5 3.5 3.3	21 28 34 41 47	3.0 2.8 2.8 2.6	2.6 2.6 2.5 2.4 2.5	1.9 1.7 1.7 1.6	1.3 1.3 1.3 1.3
21 22 23 24 25	5·3* 4.4 4.2 4.0 3.8	3.3 3.0 3.0 3.0	52 48 43 35 25	2.8 3.0 3.0 3.0	2.5 2.5 2.4 2.4	1.6 1.5 1.5 1.5	1.3 1.3 1.3 1.3
26 27 28 29 30 31	3.7 3.5 3.3 3.0 3.0 3.3	3.3 3.5 3.7 3.5 3.5	23 22 21 19 18 16	3.3 3.3 3.3 3.3	2.4 2.4 2.3 2.3 2.3 2.2	1.5 1.5 1.5 1.5 1.5	1.3 1.3 1.3 1.3
Mean	3.8	3.4	18,9	5 . 6	2.6	1.8	1.4
Runoff in acre-feet	82	205	1160	332	158	112	80

^{*} Beginning of Record

TABLE 47 DAILY MEAN DISCHARGE

PINE CREEK AT NORTH AND SOUTH DIVERSION

Day :	March	: April	: May	: June	: July :	August :September
1 2 3 4 5		2.2 2.3 2.3 2.3 2.2	3.0 3.0 4.1 5.5 7.9	5.0 6.5 7.7 7.5 8.7	0.2 0.2 0.2 0.2 0.1	Y As a
6 7 8 9 10		2.2 2.9 3.3 3.5 3.6	11 23 27 23 18	12 9.9 7.7 6.8 6.4	0.1 0.1 0.1 0.1	
11 12 13 14 15		3.3 3.8 3.9 3.8	15 13 15 20 34	5.0 4.4 4.1 3.6 3.1	0.0**	
16 17 18 19 20	3 . 8*	3.5 3.5 3.2 2.9 3.0	46 50 42 32 15	2.5 2.0 1.6 1.3 1.1		
21 22 23 24 25	3.9 3.8 3.8 3.5 3.1	3.0 3.2 3.0 2.9 3.0	15 14 9.8 5.6 5.5	0.8 0.6 0.5 0.5 0.4		
26 27 28 29 30 31	2.6 2.5 2.5 2.4 2.4	3.2 3.3 3.2 3.0	6.1 4.8 4.7 4.8 4.1 4.2	0.3 0.3 0.3 0.2 0.2		
Mean	3.1	3.1	15.7	3.7	0.1	
Runoff in acre-feet	73	182	968	220	2.8	

^{*} Beginning of record

^{**} No flow for remainder of season

TABLE 48
DAILY MEAN DISCHARGE
CEDAR CREEK AT CEDARVILLE

Day	March	: April	: May	: June	: July	: August	:September
1 2 3 4 5	4.2 4.1 4.0 4.1 3.8	6.4 6.4 6.6 6.6 6.7	9.1 9.1 9.1 11 13	17 17 17 17 17	3.8 3.0 2.9 2.8 2.6	0.9	0.3 0.2 0.2 0.3 0.4
6 7 8 9 10	3.8 3.8 4.0 4.3 4.2	6.9 7.5 8.0 8.4 8.4	15 18 22 21 20	18 17 17 16 16	2.3 2.2 2.1 1.9 1.9	0.8 0.8 0.7 0.7 0.6	0.3 0.3 0.2 0.2
11 12 13 14 15	4.5 4.5 4.6 4.5 4.5	8.6 8.6 8.8 8.8	19 18 19 19 20	15 14 13 12 12	1.7 1.6 1.4 1.5	0.6 0.6 0.6 0.6 0.5	0.3 0.3 0.3 0.2
16 17 18 19 20	5.8 6.4 6.4 6.2 6.1	9.1 9.1 9.1 9.1 9.1	21 21 21 20 20	11 10 9.3 8.8 7.8	1.4 1.8 1.5 1.6 1.5	0.4 0.4 0.4 0.4 0.4	0.3 0.3 0.3 0.3
21 22 23 24 25	6.4 6.7 6.9 6.7	8.8 8.8 8.8 8.8	20 20 20 19 19	7.3 6.9 6.4 5.4 4.7	1.4 1.3 1.2 1.1	0.4 0.3 0.3 0.3 0.3	0.2 0.2 0.2 0.2 0.2
26 27 28 29 30 31	6.4 6.4 6.4 6.6 6.4	8.8 8.8 9.3 9.5 9.1	18 18 17 18 17	4.5 4.1 4.5 4.2	1.3 1.2 1.2 1.1	0.4 0.4 0.3 0.3 0.3	0.2 0.3 0.2 0.2 0.3
Mean	5.4	8.3	17.7	11.2	1.8	0.5	0.3
Runoff in acre-feet	329	496	1090	665	108	32	15

TABLE 49 DAILY MEAN DISCHARGE

NORTH DEEP CREEK ABOVE ALL DIVERSIONS

Day : Mar	ch : April	: May	: June	: July	: August	:September
1 2 3 4 5	3·7* 3·5 3·7 3·7 3·9	5.2 5.5 5.8 9	8.1 7.0 6.8 7.0 7.2	2.8 2.3 2.0 1.8 1.5	0.4 0.4 0.4 0.4 0.3	0.3 0.3 0.3 0.3
6 7 8 9 10	4.1 4.4 4.4 4.6 4.9	8.8 11 13 14 13	8.8 9.2 8.5 8.1	1.3 1.3 1.2 1.2	0.4 0.4 0.4 0.4 0.3	0.3 0.3 0.3 0.3
11 12 13 14 15	4.4 4.1 3.9 4.1 3.9	11 9.2 9.2 9.5 8.5	8.1 8.1 7.5 7.2 6.8	1.2 1.1 1.1 1.0 1.0	0.3 0.4 0.4 0.3	0.3 0.3 0.3 0.3 0.3
16 17 18 19 20	3.7 4.1 4.6 4.4 4.1	7.6 8.8 9.8 13	6.0 6.0 5.2 4.6 4.4	0.9 0.8 0.8 0.7	0.3 0.3 0.3 0.3 0.3	0.3 0.3 0.3 0.3
21 22 23 24 25	4.1 4.1 3.9 3.9 4.1	17 18 18 14 13	4.4 3.9 3.7 3.5 3.5	0.7 0.6 0.6 0.5 0.5	0.3 0.3 0.3 0.3	0.3 0.3 0.3 0.3
26 27 28 29 30 31	4.4 4.6 5.2 5.5 5.5	10 9.8 9.8 9.2 8.8 8.5	3.5 3.2 3.2 3.0 2.8	0.5 0.5 0.5 0.5 0.5	0.4 0.4 0.4 0.4 0.4 0.4	0.3 0.3 0.3 0.3
Mean	4.2	10.5	5.9	1.0	0.3	0.3
Runoff in acre-feet	253	645	353	63	21	18

^{*} Beginning of record

TABLE 50 DAILY MEAN DISCHARGE

SOUTH DEEP CREEK ABOVE ALL DIVERSIONS

Day	·-	March	: April	: May	: June	: July	: August	:September
1 2 3 4 5			4.7* 4.7 4.6 4.6 4.7	4.0 4.0 4.1 4.1 4.1	6.7 6.5 6.2 6.1 5.7	2.6 2.5 2.4 2.3 2.2	0.5 0.4 0.4 0.4 0.4	0.3 0.3 0.3 0.3 0.3
6 7 8 9		**************************************	4.8 4.9 5.0 4.9 4.9	4.6 4.9 5.2 5.6	5.7 5.6 5.5 5.4	2.2 2.2 1.9 1.8	0.4 0.4 0.3 0.3 0.3	0.3 0.3 0.3 0.3 0.3
11 12 13 14 15			4.8 4.7 4.8 4.9 4.9	6.0 6.2 6.6 6.7	5.2 5.1 5.0 4.9 4.7	1.5 1.4 1.4 1.3	0.3 0.3 0.3 0.3	0.3 0.3 0.3 0.3
16 17 18 19 20			4.8 4.9 4.8 4.7 4.6	7.1 7.3 7.6 8.0 8.2	4.6 4.5 4.1 4.0 3.9	1.2 1.2 1.1 1.1	0.3 0.3 0.3 0.3	0.3 0.3 0.3 0.3 0.3
21 22 23 24 25			4.6 4.5 4.2 4.2	8.6 8.7 8.6 8.1 8.0	3.9 3.8 3.7 3.5 3.4	0.9 0.8 0.7 0.6 0.5	0.3 0.3 0.3 0.3	0.3 0.3 0.3 0.3 0.3
26 27 28 29 30 31			4.5 4.5 4.2 4.1 4.0	7.9 7.8 7.5 7.2 6.9	3.3 3.2 3.1 3.0 2.9	0.5 0.5 0.5 0.5 0.5	0.3 0.3 0.3 0.3 0.3	0.3 0.3 0.3 0.3 0.3
Mean			4.6	6.5	4.6	1.3	0.3	0.3
Runoff in acre-feet			275	400	275	81	20	18

^{*} Beginning of record

TABLE 51
DAILY MEAN DISCHARGE

OWL CREEK BELOW ALLEN-ARRECHE DITCH

Day	March	: April	: May	June	July	: August	September
1 2 3 4 5		3.7 * 3.7 3.7 3.8 3.9	3.4 3.7 4.3 5.5 6.1	48 42 43 41 44	34 32 30 28 26	5.3 4.8 4.2 3.8 3.5	1.7 1.7 1.7 1.7
6 7 8 9 10		3.9 3.9 4.0 4.1 4.1	8.1 20 16 14 21	53 49 54 54 54	24 22 20 19 17	3.5 3.5 3.3 3.1 3.0	1.6 1.6 1.6 1.6
11 12 13 14 15		3.7 3.8 4.1 4.2 4.0	17 14 13 16 25	57 47 47 44 43	16 14 13 13 12	2.9 2.8 2.6 2.5 2.4	1.6 1.6 1.5 1.5
16 17 18 19 20		3.7 3.5 3.2 3.0 2.9	32 42 55 57 56	48 55 58 61 63	12 12 10 10 9.8	2.4 2.4 2.3 2.3 2.3	1.5 1.5 1.6 1.6
21 22 23 24 25		2.9 2.9 2.9 3.0	56 60 67 61 59	64 64 52 45 42	9.1 8.9 8.2 7.5 7.0	2.2 2.2 2.1 2.1	1.5 1.4 1.4 1.3
26 27 28 29 30 31		3.0 3.0 3.0 3.1 3.1	62 58 54 49 44 49	43 46 43 38 36	6.6 6.2 6.0 6.0 5.8 5.6	2.1 2.0 1.9 1.9 1.9	1.2 1.2 1.1 1.1
Mean	***************************************	3.5	33.8	49.3	14.5	2.8	1.5
Runoff in acre-feet) (() (() () () () ()	208	2080	2930	894	169	90

^{*} Beginning of record

TABLE 52 DAILY MEAN DISCHARGE RADER CREEK ABOVE ALL DIVERSIONS

Day :	March:	April	: May	: June :	July	: August	:September
1 2 3 4 5		0.6* 0.6 0.6 0.6 0.6	0.5 0.5 0.5 0.6 0.8	26 26 27 27 27	22 20 20 19	2.9 2.9 2.8 2.8 2.8	2.1 2.1 2.1 2.1 2.1 2.1
6 7 8 9 10		0.6 0.6 0.6 0.6	1.2 2.1 2.7 2.3 1.1	27 28 28 31 30	18 17 15 15 13	2.7 2.7 2.7 2.5 2.5	1.9 1.9 1.7 1.6 1.4
11 12 13 14 15		0.6 0.6 0.7 0.7	1.0 0.8 0.7 0.7 2.3	3() 28 27 26 27	12 11 10 9.4 8.9	2.4 2.3 2.1 1.7 1.6	1.4 1.3 1.3 1.1
16 17 18 19 20		0.7 0.7 0.6 0.6 0.6	6.2 8.5 14 15	29 30 31 32 30	8.0 8.0 7.1 6.4 5.9	1.4 1.4 1.3 1.4	1.1 1.0 1.0 0.9
21 22 23 24 25		0.5 0.5 0.5 0.5 0.5	19 26 24 26 24	28 27 27 27 28	5.1 4.6 4.6 4.2 4.2	1.7 1.9 1.9 1.9	0.8 0.8 0.8 0.8
26 27 28 29 30 31		0.5 0.5 0.5 0.5	25 26 26 25 26 26	27 27 26 25 24	3.8 3.6 3.6 3.6 2.9	1.9 1.9 2.1 2.1 2.1	0.8 0.8 0.8 0.8
Mean		0.6	11.3	27.8	10.0	2.1	1.3
Runoff in acre-feet		35	693	1650	612	131	76

^{*} Beginning of record

TABLE 53 DAILY MEAN DISCHARGE

Eagle Creek at Eagleville

Day	March	: April	: May	June	: July	-August	:September
1 2 3 4 5	1.6 1.6 1.7 1.7	2.1 1.9 1.7 1.6 1.6	1.3 1.6 1.9 1.9	21 20 21 23 23	30 29 27 27 24	5.3 5.1 4.9 4.9 4.7	2.6 2.6 2.8 2.8 2.9
6 7 8 9 10	1.9 2.1 2.2 2.4 2.2	1.6 1.6 1.6 1.7 1.9	2.6 6.9 13 16 10	23 24 27 30 30	22 22 20 18 17	4.5 4.1 3.9 3.9	2.6 2.5 2.4 2.4 2.4
11 12 13 14 15	2.2 2.1 2.2 2.4 2.4	1.9 1.9 1.9 1.9	8.0 6.6 6.2 7.6 11	28 22 21 23	17 16 14 13	3.7 3.7 3.6 3.6 3.6	2.4 2.2 2.2 2.0 2.0
16 17 18 19 20	2.4 2.4 2.4 2.4 2.4	1.9 1.7 1.7 1.7	16 21 27 37 41	25 25 27 26 24	13 11 10 10 9.0	3.6 3.4 3.4 3.4	1.9 2.0 2.1 2.0 2.1
21 22 23 24 25	2.2 2.1 2.1 2.1 2.1	1.7 1.7 1.6 1.6	40 39 29 27 23	26 25 25 26 29	8.7 8.3 7.7 7.4 7.2	3.2 3.2 3.2 3.0	2.0 2.0 2.0 2.1 2.1
26 27 28 29 30 31	1.9 1.9 1.9 2.1 2.1	1.6 1.3 1.3 1.3	22 22 22 23 23 23	33 35 36 36 31	7.2 6.6 6.6 6.3 5.7 5.4	3.3 3.0 2.9 2.9 2.9 2.8	1.9 1.9 1.9 1.9
Mean	2.1	1.7	17.1	26.2	14.2	3.7	2.2
Runoff in acre-feet	129	100	1050	1560	871	228	132

TABLE 54 DAILY MEAN DISCHARGE

EMERSON CREEK ABOVE ALL DIVERSIONS

' Day	_:_	March	: April	_:_	May	·_:_	June	_:_	July	_:_	August	:Se	ptembe	er
1 2 3 4 5			2.6* 2.6 2.6 2.6 2.7		2.5 2.5 2.6 2.7 2.9		18 16 17 18 17		10 9.5 8.5 8.0 7.6		2.8 2.8 2.8 2.8		2.5 2.4 2.4 2.5 2.5	
6 7 8 9 10		• • • •	2.7 2.7 2.8 2.8 2.8		3.5 6.0 12 17 16		17 18 20 21 22		6.8 6.0 5.6 5.0 4.6		2.8 2.8 2.7 2.7		2.6 2.6 2.6 2.6 2.6	
11 12 13 14 15			2.7 2.7 2.8 2.7		12 8.5 10 12 17		22 22 22 21 20		4.3 4.0 4.0 4.0 4.0		2.6 2.6 2.6 2.6 2.6		2.6	
16 17 18 19 20			2.8 2.7 2.7 2.6		20 28 35 37 38		20 21 23 21 20		3.8 3.8 3.8 3.8 3.5		2.6 2.6 2.6 2.6		2.6 2.6 2.6 2.6 2.6	
21 22 23 24 25		,	2.6 2.6 2.6 2.5		40 46 41 37 32	-	20 20 18 18		3.5 3.1 3.0 3.0 2.9		2.6 2.6 2.6 2.6		2.6 2.6 2.6 2.6 2.6	
26 27 28 29 30 31	•		2.5 2.5 2.6 2.5		29 27 25 24 22 21		16 15 14 12		2.9 2.9 2.9 2.9 2.9		2.6		2.6 2.6 2.6 2.6 2.6	
Mean			2.6		20.3		18.6		4.6		2.8		2.6	
Runoff in acre-feet			158	· 1	.250	1	.100		285		173	15	- -	·

^{*} Beginning of record

Susan River Watermaster Service Area

a part of the first of the second of the second

ta balan garan dan keraja bakan dan keraja berada basar basar B

The Susan River service area is located in the southern part of Lassen County in the vicinity of Susanville. There are 164 water right owners in the service area with total allotments of 351.732 cubic feet per second. The primary place of use is in Honey Lake Valley between Susanville and the northwest shore of Honey Lake, a distance of about 25 miles. The valley floor is at an elevation of about 4,000 feet. The source of supply is comprised of three stream systems: Susan River and tributaries, Baxter Creek and tributaries, and Parker Creek.

Susan River originates on the east slope of the Sierra Nevada immediately east of Lassen National Park at an elevation of about 7,900 feet. Its channel runs easterly from Silver Lake through McCoy Flat Reservoir, the town of Susanville, and then to Honey Lake.

Susan River has four major tributaries: Piute Creek, entering from the north at Susanville; Gold Run and Lassen Creeks, entering from the south between Susanville and Johnstonville; and Willow Creek, entering from the north above Standish. Gold Run and Lassen Creeks rise on the north slope of Diamond Mountain at an elevation of about 7,600 feet. The watersheds of Piute and Willow Creeks are on the south slopes of Round Valley Mountain at lower elevations.

A short distance below its confluence with Willow Creek the Susan River divides into three channels: Tanner Slough Channel on the north, Old Channel in the middle, and Dill Slough Channel on the south. Hartson Slough and Whitehead Slough divert from Dill Slough on its south bank farther downstream.

The Baxter Creek stream system is located in Honey Lake Valley on the east slope of the Sierra Nevada about 10 miles southeast of Susanville. The principal creeks in the system are: Baxter Creek, which rises in the extreme western portion of the basin and flows in an easterly direction; Elesian Creek, Sloss Creek, and Bankhead Creek are tributaries of Baxter Creek from the south.

Parker Creek is situated in Honey Lake Valley on the east slope of the Sierra Nevada about 15 miles southeast of Susanville. It rises on the east slope of Diamond Mountain and flows in a easterly direction for about five miles into Honey Lake.

A schematic drawing of each major stream system within the Susan River service area is presented as Figures 17 through 17e, pages 251 through 261.

Water Supply

The water supply in the Susan River service area is obtained from two major sources, snowmelt runoff and springs. Snowpack on the Willow Creek Valley and Piute Creek watersheds, which embrace more than one-half of the Susan River stream system, melts early in the spring and is usually depleted by May 1. Irrigation requirements from this portion of the stream system are then almost entirely dependent on the flow of springs that are relatively constant throughout the year.

Under average flow conditions, Lassen, Gold Run, Baxter, and Parker Creeks and Susan River above Susanville are sustained by snowmelt runoff until early June. The flow from perennial springs in this portion of the system is comparatively small.

The Lassen Irrigation District stores supplemental water in Hog Flat and McCoy Reservoirs, located on the headwaters of the Susan River. This stored water is released into the Susan River channel and commingled with the natural flow, usually during June and July. It is then rediverted into Lake Leavitt for further distribution by the irrigation district.

Records of the daily mean discharge of the several stream gaging stations in the service area are presented in Tables 55 through 63, pages 263 through 271.

Methods of Distribution

Irrigation in the Susan River service area is accomplished by placing dams in the main channels, thus raising the water level for subsequent diversion into canals and ditches. These diversion dams are

relatively large on the Susan River channel and much smaller on the tributaries. Wild flooding is the most common method of irrigation in practice. Portions of the irrigated lands have been leveled, permitting a more efficient use of water by using border checks and furrows. Subirrigation occurs in some areas incidental to surface irrigation or as a result of seepage from ditches and creek channels.

The Lassen Irrigation Company is entitled to divert or store up to the present capacity of its reservoirs from the natural flow of Susan River between March 1 and July 1 of each year when the flow of the Susan River immediately above Willow Creek is greater than 20 cubic feet per second. The company may divert at all other times when the flow of the Susan River immediately above Willow Creek is more than 5 cubic feet per second in spite of the allotments granted to users in Schedules 3 and 6 and to users of third priority class in Schedule 5 of the Susan River decree. When the flow of the Susan River immediately above Willow Creek is below the required amount the watermaster then measures the inflow to McCoy Flat Reservoir and if available, releases the amount required. A transportation loss of 15 percent, or a minimum of two cubic feet per second, is deducted from all water transferred from Lassen Irrigation Company upstream storage reservoirs, to Lake Leavitt.

The several decrees (see Table 1) which apply to the Susan River service area establish the following number of priority classes for the major stream systems and distribution areas: Baxter Creek - five; Parker Creek - four; Gold Run Creek - three; Lassen Creek - two; Piute and Hills Creek - one; Willow Creek - two; and Susan River - three. Geographical features are such that the Susan River, Willow Creek, and Lower Susan River areas are subject to interrelated priorities.

1967 Distribution

Watermaster service began March 27 in the Susan River service area and continued until September 30. Kenneth E. Morgan, Water Resources Engineering Associate, was watermaster during this period.

The available natural flow water supply throughout the Susan River

service area was well above average. An unusually heavy snowfall during April brough the May 1 snow survey measurements to about 200 percent of normal for the Susan River watershed. Many ranchers in the Honey Lake Valley reported record hay crop yields.

Parker Creek. The available water supply in Parker Creek was sufficient to satisfy all allotments (four priorities) until June 20. From June 20 to July 10 the flow decreased rapidly to first priority allotments. From July 10 throughout the remainder of the season only first priority allotments (stockwater) were served.

<u>Baxter Creek.</u> The available water supply in Baxter Creek was sufficient to supply all allotments (five priorities) until June 23. The flow rapidly decreased from June 25 to July 1 when approximately 50 percent of third priority allotments were supplied. From July 15 through September 30 the flow remained reasonably constant at approximately 50 percent of first priority allotments, providing some irrigation water for the upper users and stockwater for the lower users.

Lassen-Holtzclaw Creek. The available water supply in Lassen-Holtzclaw Creek was sufficient to meet all allotments (two priorities) until July 5. The flow decreased to first priority allotments on August 5. From August 5 throughout the remainder of the season the Tangeman Ranch was entitled to all of the water available in the stream system.

Hills Creek. The available water supply in Hills Creek was sufficient to supply all allotments (one priority) until about July 15. From August 1 through September 30 approximately 50 percent of the total allotments were served. All storage facilities on Hills Creek were filled during spring runoff.

Gold Run Creek. The available water supply in Gold Run Creek was sufficient to supply all allotments (three priorities) until July 5. From July 5 to August 1 the flow rapidly decreased to approximately 10 percent of second priority allotments. From August 1 through September 30 the flow remained reasonably constant at about 10 percent of second priority allotments.

<u>Piute Creek.</u> The available water supply in Piute Creek was sufficient to satisfy all allotments (one priority) and also provide a small surplus flow to the Susan River throughout the season.

<u>Willow Creek.</u> The available water supply in Willow Creek was sufficient to satisfy all allotments (two priorities) throughout the season.

A problem of heavy growth of moss, weeds, etc., exists annually in Willow Creek during the summer months. From July 5 through August 28, the Hansen and Hagata ranches in this area would not drain sufficiently for haying operations. Therefore, on July 28 a second pump was installed in Willow Creek at Horse Lake Road to assist in diverting water to the Eagle Lake Canal. This resulted in a lowering of the water surface in Willow Creek which allowed the moss and weeds to dry out and the low lands to drain.

Susan River. The available water supply in Susan River was sufficient to satisfy all allotments in Schedule 6 (three priorities) until June 23. As the flow receded Schedule 6 was terminated for the season. All allotments in Schedule 3 (two priorities - Lower Susan River area) were satisfied until July 5. From mid-July throughout the remainder of the season there was enough water for about 50 percent of second priority allotments in this schedule.

All allotments in Schedule 5 (three priorities - Upper Susan River area) were satisfied until July 4. From mid-July to August 15 there was enough water for about 25 percent of second priority allotments in this schedule. From August 15 throughout the remainder of the season, water was available for 10 percent of second priority allotments.

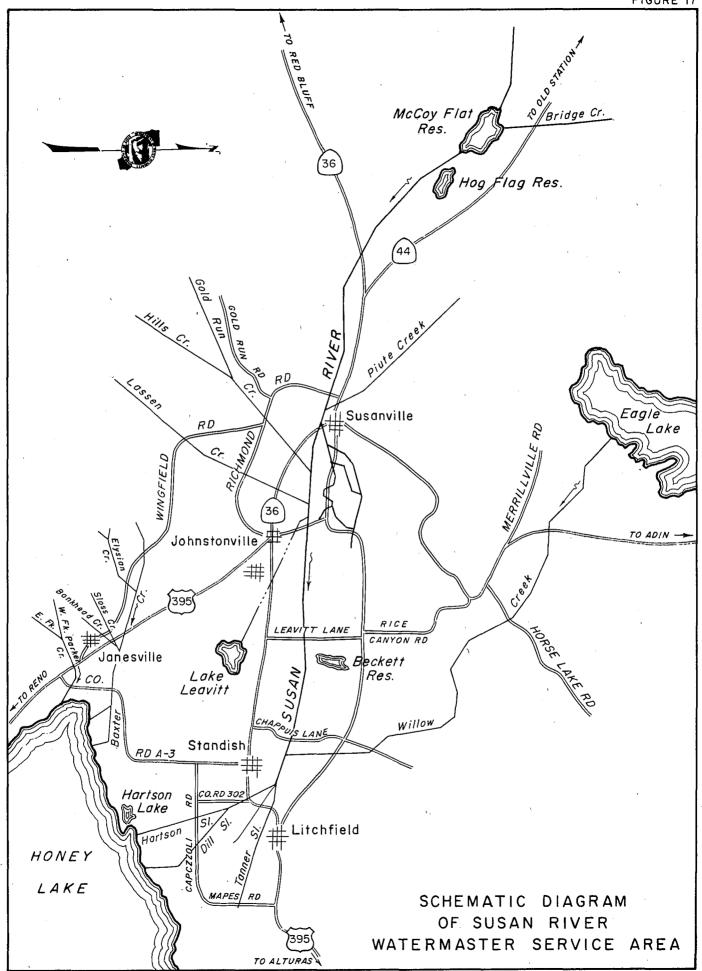
Lassen Irrigation Company Reservoirs. The Susan River decree allows the Lassen Irrigation Company's McCoy Flat and Lake Leavitt reservoirs to store surplus water during winter and spring months. Once filled, or if a shortage occurs among downstream water right owners, the natural flow in Susan River above McCoy Flat Reservoir must be released.

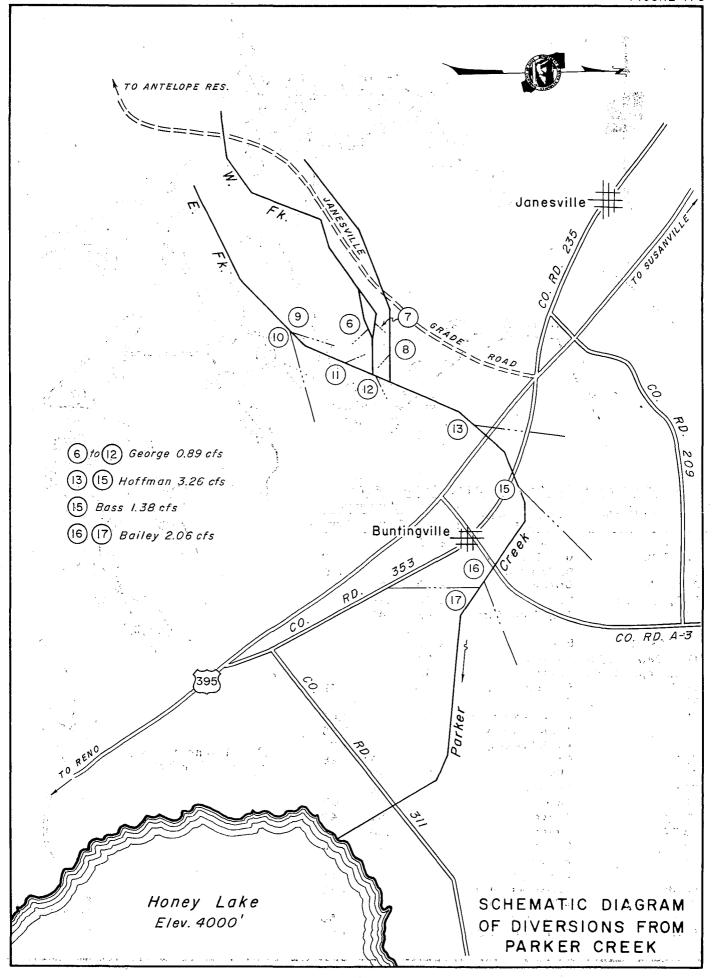
During early spring the above reservoirs filled to capacity. By July 4 the flow of Susan River became less than the evaporation losses in McCoy Flat Reservoir. Also, downstream water right owners were in need of additional water. Therefore, controlled releases had to be made. The Company requested that the required releases (equal to the inflow) from McCoy Flat Reservoir be made instead from their downstream Hog Flat Reservoir. This reservoir is quite shallow and has unusually high evaporation losses.

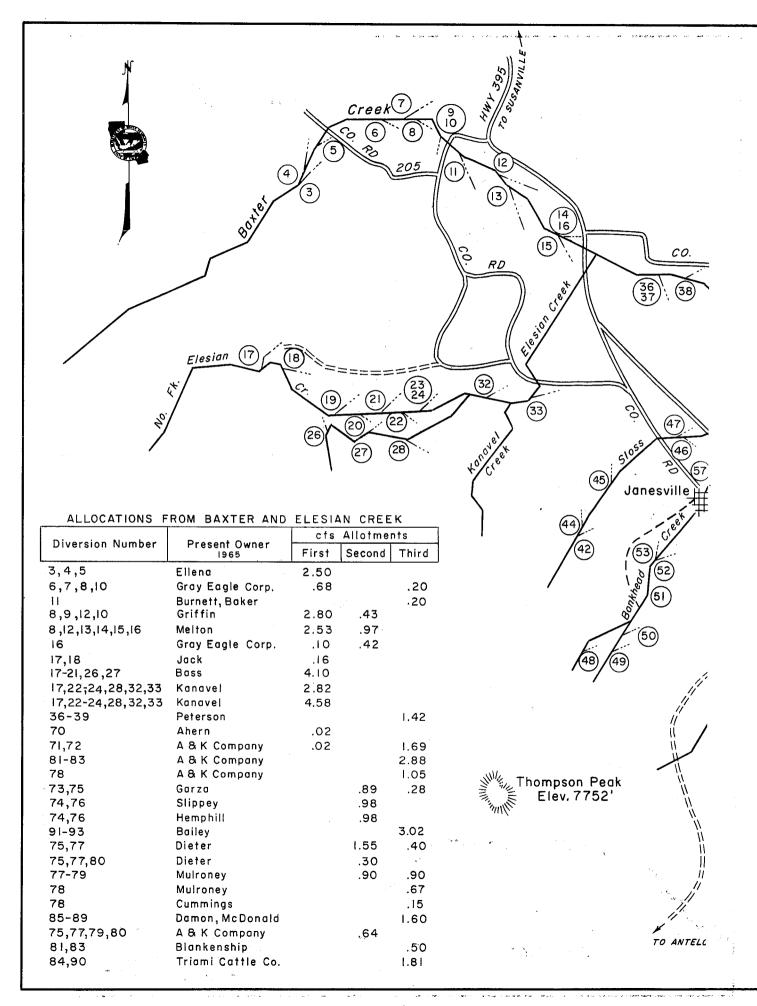
The watermaster granted permission to operate as requested. Consequently, between July 4 and July 14 at which time inflow to McCoy Flat Reservoir ceased for the summer, a total of 324 acre-feet was released from Hog Flat Reservoir for use by the downstream water right owners.

Special Occurrences

On July 20 an upright timber in the Lassen Irrigation Company diversion dam number 41 broke, sending approximately 130 cubic feet per second downstream. As a result the Barham Dam, diversion number 46 on the Susan River, was severely damaged. It was not in use for the remainder of the season. Water was again diverted into the diversion number 41 canal within nine hours after the break occurred.







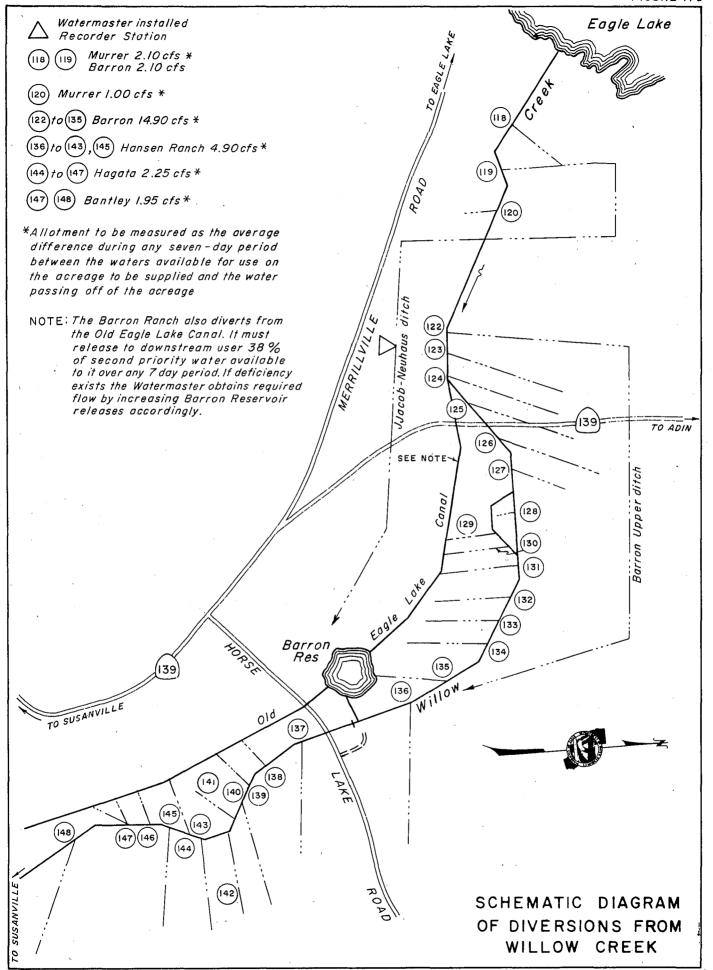
	ALLOCATION	NS FROM SLOSS A	ND BANKE	HEAD CREE	KS		
	Diversion Number	Present Owner	cf	s Allotmen	s		
	STACTOL MAILING	1965	First Se	econd Third	d Total		
·	42 44 45 46 46,47 48,49,50 51 52,53,55 56,62 63,65	Bowersox Thornton Spears Grover Peterson Row Holmes Pipeline Pyle Ashmore Thomasson	,10 1 .02 : .08	.08 .10 .10 .13 .11 .48 3.23	3.48 0.35		
_	66,67	Fritts	.06	.20	0.26		H .
RD BOTTS	222		co.	RD: 4-3			TO STANDISH
58 59 60 56 F	63 667 62 62 64 209 c0	AD 4-3	72/73	, 76 77	80 \	83 (83) (83) (83) (83) (83)	36 88 89 77 90
GRADE 1	RO	CO. Buntingv		92) 90 P0	311		
	Figure 17A Parker Cre	ek	353 TO RE-	SNO A		ONEY LAK Elev 4000'	
					SCHEI	MATIC DI	AGRAM

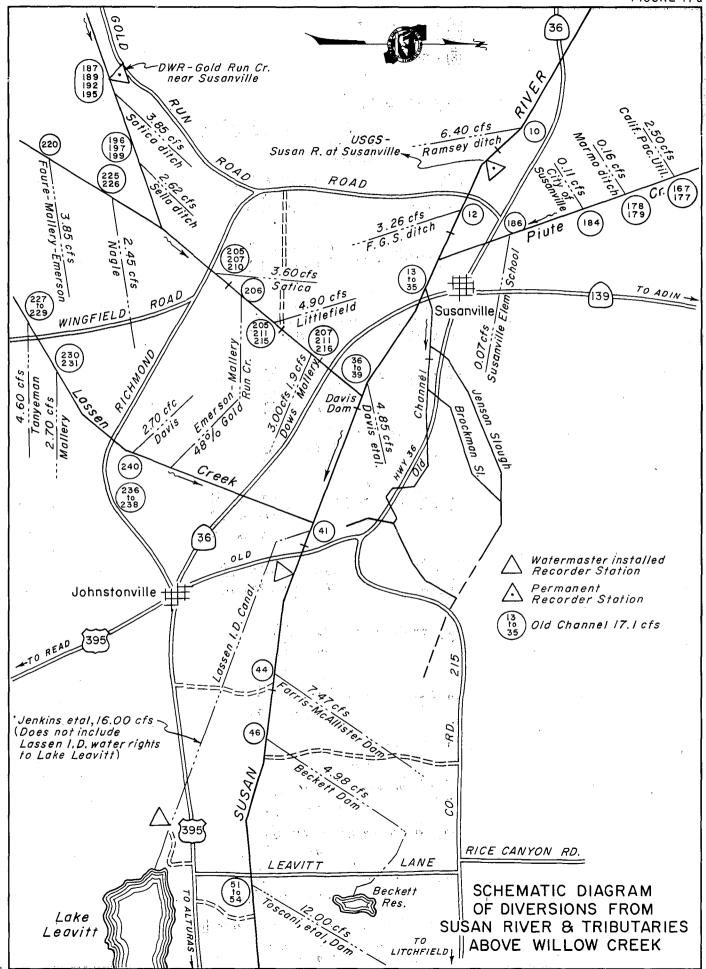
-255**-**

PE RESERVOIR

OF DIVERSIONS FROM

BAXTER CREEK





3 = Schedule 3 5 = Schedule 5 6 = Schedule 6
56,94 to 96 Barry Story Fraley Mendiboure Wagner 56,94 to 96 Barry 200cfs 3 1 95 cfs 6
71), McClelland (2.67cfs 3) 75) to 78 McClelland (2.67cfs 5) 0.75 cfs 6
(57) , (58) , (69) Gibson $\begin{cases} 2.00 \text{ cfs} & \boxed{3} \\ 5.50 \text{ cfs} & \boxed{5} \end{cases}$
(58) to (61) , Mapes $\begin{cases} 2.91 \text{ cfs} & \boxed{3} \\ 8.03 \text{ cfs} & \boxed{5} \\ 2.35 \text{ cfs} & \boxed{6} \end{cases}$
81) to 83 DeWitt { 0.33 cfs 3 0.92 cfs 5 0.50 cfs 6 Theodore { 0.50 cfs 3 1.38 cfs 5 2.60 cfs 6
85, 86 Calif Fish & Game { 3.33 cfs 3 9.17 cfs 5 6.70 cfs 6
82,87 to 89, Capezzoli { 200cfs 3 91,92 DeWitt { 5.50cfs 5
99 (102) Beckett { 2.30 cfs 3 5.50 cfs 5 5./5 cfs 6
98, (100), (101) Bailey { 1.33 cfs 3 3 3.67 cfs 5
97) Tanner { 1.33 cfs 3 3.67 cfs 5
(06, 109) Buckner {0.25 cfs 3 0.85 cfs 6
(07),(08) Beckett {0.25 cfs 3} (0.95 cfs 6
(10),(11) Anderson (0.25 cfs 3) (1.30 cfs 6)
(12) to (14) Calif. Fish & Game 3.10cfs 6

Watermaster installed Recorder Station

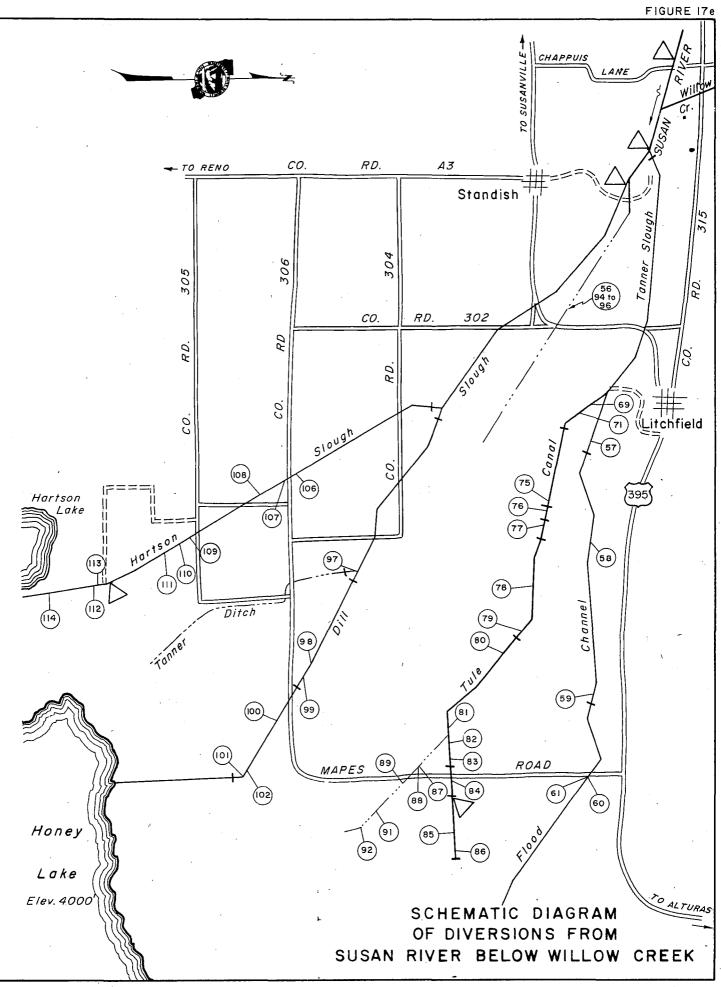


TABLE 55
DATLY MEAN DISCHARGE
SUSAN RIVER AT SUSANVILLE
March through September 1967
(In second-feet)

Day	March	: April	May	June :	July	: August	September
1 2 3 4 5	101 106 102 92 86	140 133 133 127 121	94 105 116 135 162	516 408 351 295 306	118 104 65 55 62	108 108 104 104 109	4.2 4.7 4.2 5.1 7.7
6 7 8 9	. 86 89 91 101 114	125 124 125 135 138	192 278 432 512 436	315 330 342 357 351	60 57 54 52 52	112 114 112 109 108	6.9 7.3 6.5 6.9
11 12 13 14 15	106 95 102 94 88	127 122 132 135 124	330 288 280 309 396	348 372 380 351 288	50 48 46 34 24	102 112 111 108 115	6.5 7.1 4.9 5.1
16 17 18 19 20	513 596 448 333 290	115 118 122 116 114	508 580 610 620 625	248 241 258 381 420	24 29 22 126 146	118 123 109 49	5.1 5.3 7.3 6.7 5.7
21 22 23 24 25	303 303 408 315 262	111 105 105 110 105	650 958 1250 1280 1160	354 336 300 226 120	132 118 108 102 108	20 16 13 10 8.5	5.7 6.3 6.9 6.3 5.9
26 27 28 29 30 31	226 208 204 182 164 158	101 103 100 95 91	1030 886 742 660 605 576	98 90 84 88 98	106 112 112 112 109 111	8.3 7.9 8.1 7.1 5.9 5.1	5.5. 5.5 5.5 5.5
lean	205	118	542	288	. 79.3	70.0	5.9
Runoff in acre-feet	12630	7050	33330`	17160	4880	4310	351

TABLE 56 DAILY MEAN DISCHARGE GOLD RUN CREEK NEAR SUSANVILLE

Day :	March:	April	: May	: June	: July	: August	September
1 2 3 4 5	5.3 5.8 6.1 5.6 5.0	8.7 8.3 8.3 8.0 7.6	4.6 5.6 6.1 8.0	46 35 31 31 32	20 19 17 15 14	4.3 3.9 3.7 3.5 3.3	1.3 1.2 1.2 1.2
6 7 8 9 10	4.8 4.8 4.8 5.3 5.8	7.6 7.6 8.3 8.3 9.1	13 21 35 40 27	34 36 37 41 45	14 12 12 12 9.8	3.2 3.0 3.0 2.8 2.5	1.2 1.2 1.2 1.2 1.2
11 12 13 14 15	6.4 6.7 7.0 4.8 5.3	8.0 7.6 8.0 8.0 7.3	19 18 19 27 46	47 51 51 51 52	9.8 9.1 8.7 8.7 7.6	2.4 2.2 2.2 2.2 2.2	1,2 1,2 1,1 1,1
16 17 18 19 20	52 54 31 23 19	6.4 6.4 6.1 5.8	76 95 103 110 115	54 59 61 61 54	9.8 8.7 7.6 7.0 6.4	2.1 2.0 2.0 2.0 1.8	1.1 1.1 1.1 1.1
21 22 23 24 25	20 21 29 22 18	5.3 5.0 5.0 5.0	110 146 161 112 99	48 42 36 34 32	6.1 5.8 5.3 5.3 5.0	1.7 1.7 1.6 1.6	1.1 1.1 1.1 1.1
26 27 28 29 30 31	15 14 14 12 11	4.8 4.8 4.6 4.6 4.1	87 85 83 79 72 64	30 27 26 24 23	4.8 4.6 4.6 4.1 4.3	1.7 1.6 1.6 1.5	1.1 1.0 1.0 1.0
Mean	14.5	6.7	61.2	41.0	9.1	2.3	1.1,
Runoff in acre-feet	890	397	3760	2440	561	143	,65,

TABLE 57 DAILY MEAN DISCHARGE

SUSAN RIVER AT JOHNSTONVILLE BRIDGE

Day	: March :	April	: May	: June	July	: August	:September
1 2 3 4 5	7 - 2 - 3	***************************************			92 48 42 46 50	4.0 3.9 3.8 3.7 3.6	1.8 1.8 1.8 1.8
6 7 8 9 10					55 45 20 37 36	3.6 3.6 3.7 3.5	1.7 1.6 1.6 1.6 1.5
11 12 13 14 15					32 22 21 19 20	3.0 3.0 2.7 2.6 2.4	1.5 1.4 1.4 1.4
16 17 18 19 20		100 mm (100 mm) (100			21 27 24 15 100	2.2 2.0 2.0 1.9 1.7	1.4 1.4 1.4 1.4
21 22 23 24 25				· · · · · · · · · · · · · · · · · · ·	28 16 11 11	1.6 1.8 1.8 2.0 2.0	1.4 1.4 1.4 1.4
26 27 28 29 30 31			Annual Company of the		10 6.2 4.9 6.2 4.3 4.1	2.0 2.0 1.9 1.9 1.9	1.4 1.4 1.4 1.4
Mean	الله الله الله الله الله الله الله الله		*** *** *** *** *** *** *** *** *** **		28.5	2.6	1.5
Runoff in acre-feet	, 3	1	er ja		1750	161	189 Providence

 $[\]star$ Mean daily flow from April 1 to June 30 was in excess of 100 cfs.

TABLE 58 DAILY MEAN DISCHARGE

WILLOW CREEK NEAR SUSANVILLE

Day :	March	April	May	June	July	: August :	September
1 2 3 4 5	54 53 51 48 47	43 43 43 41 39	39 39 38 39 40	26 32 31 27 28	21 20 19 18 17	20 19 19 19	12 12 12 12,
6 7 8 9 10	47 46 45 45 3 ¹ 4	36 40 40 39 38	42 43 45 44 41	30 29 28 32 33	16 16 16 17 17	15 14 14 14 13	13 13 13 12 11
11 12 13 14 15	31 30 30 35 37	40 41 39 39 40	36° 35 33 30 28	33 31 31 31 29	18 17 17 16 16	13 13 13 13	11 11 10 10
16 17 18 19 20	228 522 369 197 137	38 37 43 45 43	30 30 29 28 27	27 25 24 23 26	15 16 16 17 17	13 13 12 12 12	11 11 11 % 11 %
21 22 23 24 25	122 102 96 98 87	41 40 39 43 45	25 23 18 17 16	31 28 24 23 22	17 17 17 17 17	12 12 12 12 12	11 11 11 11
26 27 28 29 30 31	79 72 61 57 48 43	44 43 42 41 40	19 24 26 24 17 18	25 26 25 24 23	17 18 18 19 20 21	12 12 12 11 11	11 11 11 11
Mean	95.2	40.8	30.4	27.6	17.4	13.6	11.4
Runoff in acre-feet	5850 _:	2430	1870	1640	1070	837	676

TABLE 59 DAILY MEAN DISCHARGE

WILLOW CREEK NEAR LITCHFIELD

Day :	March:	April	: May	: June	July	: August	:September
1 2 3 4 5	73 68 67 61 60	56 56 56 53 50	45 44 44 43 44	31 37 39 34 33	24 23 22 21 20	19 19 19 18 18	16 15 15 14 14
6 7 8 9 10	60 58 56 56 49	46 53 52 49 48	46 46 48 48 48	35 36 37 39 41	19 18 19 19 20	18 19 19 19	14 13 13 13 13
11 12 13 1 ¹ 4 15	43 49 44 48 52	50 51 49 47 50	44 44 40 36 33	39 38 36 36 34	20 21 21 21 21	19 19 19 18	13 13 13 12 12
16 17 18 19 20	786 1020 489 271 187	47 46 55 59 53	34 34 33 32 31	32 30 27 27 29	20 21 21 20 21	18 18 18 18 18	12 '** 12 '** 12 '** 12 '** 12 '**
21 22 23 24 25	163 141 124 128 113	50 48 46 50 55	29 27 23 21 20	32 32 28 26 25	21 21 21 21 21	18 18 18 18	11
26 27 28 29 30 31	99 79 76 72 63 56	54 50 49 47 46	21 26 29 28 23 22	27 28 28 27 26	21 21 20 20 20 19	17 17 17 17 16 16	11 11 11 11 10
Mean	152	50.7	35.0	32.3	20.6	18.0	12.4
Runoff in acre-feet	9340	3020	2150	1920	1260	1110	738

TABLE 60 DAILY MEAN DISCHARGE

SUSAN RIVER INFLOW TO MCCOY FLAT RESERVOIR

Day	: March	: April	May	: June	July :	August :S	eptember
1	7 () () () () () () () () () (
2			\$	i		·	
3				•	30* 28		* •
1 2 3 4 5			1.7		30* 28 26		
		* 2		•			
6			•		23 20		
6 7 8 9 10					15		
9			-		15 10		
10					5 . 0		
וו					3.0 2.0 **		
11 12			4.		:"		
13 14 15			,				
14 15			•				
4.)							
16							* }
17 18		•					
10 19							,
19 20					4		
0.3							
21 22							
23							
23 24 25		٠.		*			
25	•		. :				
26		- -			• .		
27					•.		
28 , 20					i.		
27 28 29 30 31							
31							
an			4 ed		16.2		
noff in			, -,	، رسم جمد عمر بعد بعد زمم مدر خمر جمد ر	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
re-feet	; .		. •		321		

^{*} Beginning of record ** End of flow

TABLE 61 DAILY MEAN DISCHARGE

McCOY FLAT RESERVOIR RELEASES TO SUSAN RIVER

	Day	:	March	:	April	•	May	:	June	:	July	: August	:September
	1 2 3 4 5	_		,				_				29 31 31 31 42	,
	6 7 8 9				1 1							51 54 57 62 61	
	11 12 13 14		42							· ·		63 75 79 83 93	
	16 17 18 19 20	,									30* 45 58	101 107 99**	
	21 22 23 24 25					,					47 32 20 20 22	· · · · · · · · · · · · · · · · · · ·	
2 2 3	26 27 28 29 30								·		28 30 32 30 30		
Mear											32.6	63.8	
	off in										841	2280	~ ~ * * - * * * * * * * * *

Beginning of releases End of releases

TABLE 63 DAILY MEAN DISCHARGE

TRANSFER OF LASSEN IRRIGATION DISTRICT WATER FROM McCOY FLAT AND HOG FLAT RESERVOIRS TO LAKE LEAVITT March through September 1967
(In second-feet)

Day	_:_	March	_:_	April	_:_	May	_:_	June	_:_	July	_:_	August	:September
1 2 3 4 5							•					79 79 77 76 83	
6 7 8 9							-		ì	8.0* 12 17		89 90 91 92 88	
11 12 13 14 15					. (22 23 11 **	<i>3</i>	88 94 95 96 102	
16 17 18 19 20										102 * 113		106 109 99 37 21	
21 22 23 24 25									:	103 89 78 77 79		16 10 5.0 2.0*	*
26 27 28 29 30 31				·					•	83 84 85 83 82 81			
lean										64.8		71.8	
Runoff i									2	440		3420	

^{*} Beginning of releases
** End of releases